INTERNATIONAL ABSTRACT OF SURGERY

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ABSTRACTS OF CURRENT LITERATURE

GENERAL SURGERY—SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE

Marquis and Others: Suture of Wounds During a Period of Attack (La suture des plaies en période d'attaque). *Bull. et mém. Soc. de chir. de Par.*, 1917, xlii, 2281.

In one of the recent large battles the surgical provision made in the authors' zone for immediate treatment of the wounded consisted of six large newly constructed operating rooms with accessories. In addition there were 11 surgical and 4 radiologic automobiles. The organization permitted 178 operations to be done in the first twenty-four hours, the majority of the cases arriving from 6 to 12 hours after being wounded.

The authors think that in the actual conditions of warfare the wounded should have their wounds sutured whenever circumstances permit. To accomplish this, all limited soft part wounds after excision were passed on to the rear hospitals for primary suture. All other cases were primarily sutured on the spot, i.e., fractures, articular, cranial and thoracic wounds in which primary suture had a functional and vital importance.

In all 298 patients were treated, representing 550 wounds; 342 were soft part wounds, 132 bone, 34 joint, 15 cranial, 11 of them with open meninges, 19 abdominal, and 12 thoracic wounds. Of the total 550 wounds, 109 were primarily and 370 secondarily sutured. Fifty days later, 108 of the 298 patients were convalescent; 122 were progressing rapidly toward cicatrization or had been evacuated for special treatment. There are only 45 patients who have not benefited from suture. The total mortality was 30, or 6.5 per cent. W. A. BRENNAN.

Churchman, J. W.: A New Incision for Exposure of the Lower Abdomen and Pelvis. *Ann. Surg.*, Phila., 1918, lxvii, 180.

The incision here described was devised by the author on account of his dissatisfaction with the exposure given by other incisions in operating upon the rectum and on the pelvic ureter. Just as in the upper abdomen the hockey-stick incision provides excellent exposure of the common duct, so the author regards his incision as the one of choice when wide exposure of the lower abdomen is necessary. The technique of the incision when used on one side alone is as follows:

1. The skin incision begins at the symphysis pubis, runs in the midline upward for about two inches, then diagonally upward and outward toward the anterior superior spine. The point at which the longitudinal incision becomes oblique may be higher or lower, according as the chief exposure desired is the upper or lower part of the pelvis.

2. Fascial incision repeats the direction of the skin incision, dividing the rectus sheath longitudinally, then crossing obliquely the anterior sheath and dividing the fascia of the obliquus externus muscle in the direction of its fibers and as high toward the anterior superior spine as desired. It is of great importance, in operating upon the bladder, that the anterior sheath of the rectus be divided down to the bone at the symphysis pubis.

3. Muscle incision. The rectus muscle, thus exposed, is freed and divided between clamps. Care is taken to push back the epigastric vessels from the posterior surface of the muscle, to clamp, divide and ligate them separately.

4. The fascia of the transversalis muscle and obliquus internus muscle and the periosteum are divided by an incision which repeats the direction of the skin incision.

In closing, the peritoneum, with the transversalis and internal oblique fascia, is sutured by a running stitch.

The divided rectus muscle may be approximated by mattress sutures. No effort at accurate approximation should be made, nor should the stitches

be drawn tightly. A good approximation of the rectus muscle is not necessary; the strength of the abdominal wall depends on the careful closure of the fascia and that is done on the principle which governs the radical cure of hernia.

The anterior sheath of the rectus and fascia of the obliquus externus muscle are closed by the overlapping method used in the radical cure of hernia, a flat overlap being obtained by one layer of mattress sutures, and a second layer which tacks down the free edge. The skin is closed by a running stitch.

The author also describes the bilateral incision. The paper is well illustrated. P. G. SKILLERN, JR.

Dunn, G. R., and Wynne, M. N.: Clinical Observations on the Hæmoglobin After Operation. *Bull. Johns Hopkins Hosp.*, 1918, xxix, 17.

The authors draw attention to the fact that there are but few observations in the literature on the hæmoglobin of surgical patients after operation. Grunwald in 1889 published a series of ten cases, from which he concluded that there is little or no oligochromæmia immediately postoperative, even after abundant hæmorrhage. His work, however, does not show when or for how long the hæmoglobin decreased.

The lowest point of the hæmoglobin curve, the authors state, is of interest to surgeons as a clinical estimate of the amount of blood lost at operation. They have been unable to find any data on this point in the literature. According to Laker, quoted by Grunwald, immediately after operation there is no change, or very slight change, in the hæmoglobin, but after several days in cases in which there has been severe hæmorrhage, there is also a great reduction of hæmoglobin. After hæmorrhage the total blood volume is decreased, the quality of the blood being first changed when it becomes thinned, owing to absorption of fluids from the intestinal tract (Hoppe-Seyler and Penzoldt, quoted by Grunwald).

In the series of cases reported by the authors, they have endeavored to show the effect upon the hæmoglobin of operations during which there has been slight, moderate, or severe hæmorrhage.

The Sahli hæmiglobinometer was used for hæmoglobin determinations, as it is an instrument particularly adapted to general clinical use. A uniform technique was observed throughout, and in almost all cases one instrument was used for all the readings on a given case. When two instruments were used on the same case, they were carefully checked against each other and corrections made, when necessary. The series of readings on a given case was made by one observer, or, when two took part in it, their findings were carefully controlled and corrections were made when necessary. In most cases the exact time of an observation was noted so that the number of hours between any two readings could be determined easily from the tables. The blood was obtained from the finger or ear, the same source being always employed for any given patient. All of the gynecological patients were operated upon under anæsthesia, nitrous oxide and oxygen, followed by ether administered by the open drop method. In tables which accompany the article, the date, time and character of the operation is recorded.

The hæmoglobin readings shortly after operation showed very little change when compared with readings made before operation, even in cases of severe hæmorrhage. The immediate postoperative reading often showed some increase over the preoperative reading. The lowest point of the hæmoglobin curve was found usually from 30 to 60 hours after operation; a difference of less than 5 per cent was not considered.

The greatest drop in hæmoglobin was usually during the first 24 to 36 hours, and was most rapid when salt solution infusions had been given.

In the series showing only a slight loss of blood at operation, the hæmoglobin readings were usually higher during the first 12 hours than those made before operation, and there was very little postoperative decrease at any time.

GEORGE E. BEILBY.

ASEPTIC AND ANTISEPTIC SURGERY

White, C. S., and Hunter, O.: The McDonald Solution. *Am. J. Obst.*, N. Y., 1917, lxxvi, 986.

The authors have carefully noted results in 150 operative cases of the use of McDonald's pyxol-acetone-alcohol solution as compared with former results from the iodine method of preparation. Four tables explain these findings in detail and demonstrate the care employed in making the tests.

In the opinion of the authors, the McDonald solution gave results inferior to the iodine method; it is not adapted for the routine sterilization of the hands from its irritating qualities; it can be used for mucous membranes; it is slightly cheaper than the iodine solution. Sterilization of the skin is unsatisfactory; it does not destroy spore-bearing organisms CAREY CULBERTSON.

McCartney, G. E., and Mewburn, F. H. H.: The Technique of the Carrel-Dakin Treatment. *Brit. M. J.*, 1918, i, 170.

The solution is prepared daily according to the method of Daufresne, tested for hypochlorite content, and sent to the ward in a carboy of amber glasses, without the addition of potassium permanganate. The solution is tested by one of the surgeons and if found of correct strength the potassium permanganate is added and the bottle stored in a closet until used.

The use of a solution around 0.5 per cent often causes a scalded appearance of the wounds and the best results are obtained when the strength of the solution is limited between 0.460 and 0.485 per cent.

All the Dakin bottles are fitted with a rubber cork, rubber tubing, and pinch cock. A series of tests showed that brown duck covered bottles are the best for protection of the solution; and that properly protected the solution will retain its potency for at least forty-eight hours.

A dressing carriage equipped with a liberal supply of instruments, syringes, etc., is essential. All the instruments are sterilized by ten minutes' boiling. The Carrel tubes are syringed out with warm water, scrubbed with a brush, soaked all night in Dakin's solution, washed off with ether, and then boiled for thirty minutes in a caustic soda solution.

The vaseline pads are made from cheese-cloth, cut in strips six by four inches in sets of twenty, dipped into hot vaseline, the surplus being drained off, and the strips placed in layers in a tin box with a perforated lid, and this sterilized in the operating room.

The medical officer does all the dressings with a nursing sister and two orderlies as assistants, whose duties are limited to the dressings and preparation of the same. One orderly looks after the sterilization of the instruments and their delivery, the other assists with the patients. The sister's attention is restricted to the carriage, handling all instruments and dressings with forceps which are not allowed to touch those used by the surgeon. The wounds, tubes and dressings are never touched with the hands, but always with clean forceps. No patient receives Dakin's solution less than two hours before dressing, which insures the bacterial count not being diluted.

Wounds are syringed with normal saline or Dakin's solution; the surrounding skin dried, and one ply of vaseline gauze applied to the edges of the wound and smeared to the skin, which allows overflow of the Dakin's solution without a Dakin's dermatitis resulting. The Carrel tubes are applied and the wound covered with a pad of absorbent cotton, or better, so placed as to catch the overflow of Dakin's solution, leaving the wound as little shut off from the air as possible. The results obtained with this technique have been most satisfactory in the majority of cases. V. C. HUNT.

Taylor, H. D., and Austin, J. H.: The Solvent Action of Antiseptics on Necrotic Tissue. *J. Exp. Med.*, 1918, xxvii, 155.

The recent interest in the chemical sterilization of wounds has led to the introduction of numerous new antiseptics, each of which has in turn been advocated because of some advantage, real or apparent. For many of these compounds, claims have been made which have not always been confirmed by carefully controlled experiments. Carrel and Dehelly have emphasized that, for the removal of the necrotic tissue that remains after mechanical cleansing, Dakin's hypochlorite solution was the antiseptic of choice because of its solvent action on devitalized tissue, and Dakin and Dunham have also recognized the value of the hypochlorite solution for this purpose.

Dakin's solution has been shown by Fiessinger and his co-workers to have a disintegrating action on pus cells. Rous and Jones have shown that intact leucocytes protected virulent bacteria which they ingested from the action of antiseptics, and that subsequently these bacteria proliferated under suitable conditions. Dakin's solution, by its solvent action on these leucocytes, minimized the danger of reinfection of the wound from this source. Because of this action on necrotic tissue, pus and serum clot, Carrel and Dehelly recommended Dakin's hypochlorite solution for the sterilization of infected wounds. Bashford demonstrated the ability of Dakin's solution in high dilution to erode the tissues of the tadpole's abdomen. He showed also that this occurred only after the circulation to the part had been interrupted for some time, due to the death of the organism.

The authors, considering this erosive action of Dakin's solution to be an important factor, planned a series of experiments to compare its solvent action with that of certain other chlorinated antiseptics. Fiessinger and his co-workers having concluded that the essential factor in the solvent action of the hypochlorites was their alkalinity, the authors' experiments were designed to determine the importance of three factors: the alkalinity, the nature of the chlorinated antiseptic employed, and the chlorine concentration of the latter.

From their results as recorded in the present paper, it seemed justifiable to Taylor and Austin to lay considerable stress on the relatively great solvent action of Dakin's hypochlorite solution as contrasted with the more recent and more stable chloramines of Dakin. It also seemed probable that to its greater ability to dissolve necrotic tissue, plasma cloth, and leucocytes it owed its chief claim to preference over the chloramines in the treatment of infected wounds. They state that curves shown by Carrel and Dehelly demonstrated the relative ease with which this solution sterilized grossly infected wounds in the initial presence of such necrotic tissue and pus.

The results of the authors' experiments showed that the solvent action of Dakin's hypochlorite solution in the degree of alkalinity used clinically was due primarily to its hypochlorite content. The slight alkalinity of Dakin's solution, while in itself without solvent action, did, however, increase the effectiveness of the hypochlorite. They feel constrained to differ, therefore, from Fiessinger and his co-workers, who attributed this action of the hypochlorite solutions to their alkalinity. In their weakly alkaline solutions, the solvent action of the hypochlorite solution ceased abruptly at about 0.2 per cent sodium hypochlorite concentration. This phenomenon occurred at a lower hypochlorite concentration as the reaction of the solution became more alkaline and vice versa. Even in neutral solutions, marked solvent action occurred as a hypochlorite-hypochlorous acid concentration of 0.5 per cent. A solution the alkalinity

of which was equal to 0.1 per cent sodium hydroxide exerted a solvent action in the absence of any other factor. Such a solution, however, the authors state is not available for clinical use because of its irritating properties.

Chloramine-T failed in these experiments to exhibit any solvent action not explicable as an effect of the alkalinity of the solution in which it was dissolved, and dichloramine-T was also wholly without solvent action. The results of their experimental studies did not, therefore, support the clinical observations of Dakin and his associates, who asserted that "the chlorine in dichloramine-T, as in the hypochlorites, has the power of dissolving dead tissues," or similar conclusions reached by Sweet, who stated: "The dichloramine-T also possesses to a marked degree the characteristic power of the chlorine solutions in aiding the digestion and removal of necrotic, sloughing tissues. The new solution seems more effective in cleaning up sloughing tissue than the older chlorine compounds." It seemed probable that the greater solvent action of hypochlorite solution, as contrasted with the chloramines, was related to the greater instability of the former. The authors have been unable to demonstrate a solvent action on blood-clot from any of the solutions of a reaction available for clinical use.

The authors found from their experiments that Dakin's hypochlorite solution had the power of dissolving necrotic tissue, pus, and plasma clot in the concentration and reaction used clinically. Chloramine-T and dichloramine-T did not exhibit this action.

The solvent action of Dakin's hypochlorite solution of the degree of alkalinity used clinically was due primarily to its hypochlorite content, but its slight alkalinity, while in itself without solvent action, enhanced the effectiveness of the hypochlorite.

In the degree of alkalinity used clinically, the solvent action of hypochlorite was absent below about 0.2 per cent sodium hypochlorite concentration.

The hypochlorite concentration at which the solvent action ceased was lower the more alkaline the solution, and vice versa.

None of the antiseptics studied by the authors had demonstrable solvent action on blood-clot.

GEORGE E. BEILBY.

Pilcher, E. M., and Hull, A. J.: The Treatment of Wounds by Flavine. *Brit. M. J.*, 1918, i, 172.

In an article in the *British Medical Journal* of December 29, 1917, a comparison is made between flavine and the Carrel-Dakin treatment in which the former is given second place, and in which it is stated that flavine delays the process of repair, allows organisms to remain on the wound surface, and prevents epithelial ingrowth. As the authors have used flavine largely in military practice and are confirmed in their good opinion of it as time passes, it seems to them something of an act of ingratitude to allow an excellent wound dressing to fall into discredit for want of support from its friends.

The difficulty of technique and the high ideal of repair are characteristic of the Carrel-Dakin method, and explain why, though it is one of the most brilliantly successful ways of treating infected wounds in war, it is also one of the most difficult to carry out to full success. It is only in certain hands that it is successful, and when it fails, it fails badly.

The authors state that in more than 5,000 cases treated with flavine they have found that for ease of preparation and application, rapidity when dealing with large numbers of cases, early cleaning of the wounds, and abatement of constitutional reaction to absorption, flavine and its congener, brilliant green, is an admirable application under all circumstances, but especially where surgeons are few, time is short, and wounds are many.

In the series of 50 cases reported it was noted that temperature falls early; that more than one-third reach the suture ideal, and that, though there is delay in the process of healing, there is some diminution in the local and general reaction to infection.

The Carrel-Dakin method is not of universal application because of its inherent difficulties of technique. Any simpler method which can be used by less skilled workers and which approaches the suture standard of the Carrel-Dakin method is worthy of an extended trial in the army. In the 5,000 or more wounds under observation no skin irritation has been observed, and in few cases was surface destruction of wounds seen treated with flavine. In these few cases a fibrinous pellicle formed which has been attributed to too strong solution and which can be readily removed with saline solution.

From their cases the authors are unable to see that healing is delayed, that organisms linger in the wound, or that epithelial ingrowth is prevented by flavine, but instead they find their patients with normal temperatures, with no signs of constitutional reactions, with healthy granulating wounds over which epithelium is growing naturally.

V. C. HUNT.

Warner, F.: The Infection of Wounds. *Intersl. M. J.*, 1918, xxv, 125.

The essential elements in the healing of wounds are fibroblasts, vascular endothelium, and fibrin.

Whether infection of a wound occurs is largely influenced by: (1) the location of the wound; (2) the character of the wound; (3) the cause of the wound. The staphylococcus is the usual pyogenic organism causing infection, the streptococcus less frequently.

There are primarily two types of wounds to be dealt with:

1. Wounds made during an operation. If the wound is clean, it should not be disturbed for the first 5 or 6 days. In bone operations it is more frequently inefficient technique than poorly devised

operation that gives failure. Skin sutures should not be tied too tightly or pressure necrosis will result.

2. Wounds as the result of accidents. All such wounds should be treated as though infective material had been introduced into them. Too much done to try to remove pyogenic organisms from a wound results in more harm than good, as the sealed lymphatics and capillaries may be opened up.

When a septic condition of a wound is once present, it becomes necessary: (1) to immobilize the infected part; (2) to institute very thorough drainage by incisions sufficiently long and deep to accomplish the purpose sought; (3) to use the hypochlorite solution in suitable wounds and situations.

Warner quotes the ideas of a number of authors along with their methods of treatment. He gives the use of iodine, hydrogen peroxide, Wright's solution, Dakin's solution and the Carrel technique and dilute solution of quinine. Freer drainage is advocated both in external wounds and in abdominal infections. One case is given in brief. Vaccines, either autogenous or polyvalent, have not been of much avail against the usual pyogenic organisms. CARL R. STEINKE.

Morison, R.: The Treatment of Infected Suppurating War Wounds. *Internat. J. Surg.*, 1918, xxxi, 33.

If it is possible to get to the bottom of an infected wound so that it can be thoroughly cleansed mechanically and suitable antiseptics applied, the wound can then be closed with interrupted sutures, always with impunity, and many times with the prospect of seeing it healed when the dressing is removed for the first time at the end of three weeks. This is a new surgical principle which will not alter, though details of the method will.

The technique is summarized as follows:

1. Under an anæsthetic, usually open ether, cover the wound with gauze wrung out of a 1:20 carbolic acid solution, and clean the skin and the surrounding area with the same lotion.

2. Open the wound freely and, if possible, sufficiently to permit inspection of its cavity. A guide (the finger is best if the size of the wound permits it, and if not, a thick probe) should be introduced to the bottom of the wound and held so that it is fully exposed.

3. Mop the surrounding skin and the wound cavity with methylated spirits and dry it.

4. Fill up the whole wound with "bipp," rub it well in with dry gauze, then remove all excess, leaving only a thin covering over the wounded surface. Dress the wound with sterile gauze and cover all with an absorbent pad, which is held in position by sticking plaster and a bandage. This dressing requires no change for days or weeks if the patient is free from pain or constitutional disturbance.

Redressing is very simply done. After removal of the old dressings, the wound is covered with a dossil of wool soaked in spirit and the sticky discharge is wiped off the surrounding skin until the skin is clean.

Necrosis of the bone is one of the end-results of sepsis. A separated portion of bone will live and take its part in repair if infection of it can be prevented. This can be done by the author's method of treatment and the consequence is that the majority of the recent fractures show no necrosis at all.

EDWARD L. CORNELL.

Magni, E.: Treatment of War Wounds of the Limbs in a Territorial Hospital (Methodo sequito nella cura dei feriti di guerra agli arti in un ospedale territoriale). *Chir. d. organ. d. mov.*, Bologna, 1917, i, 325.

In the territorial hospital of Bologna, during 18 months Magni has treated 3,618 war injuries of the limbs. He has followed the methods of the old surgeons of the sixteenth and seventeenth centuries, notably Magati, who advised as little interference as possible with a gunshot wound after its initial treatment, not even to remove the first dressing for a long time unless under special indications. Movement, according to this old authority, is one of the most frequent causes hindering recovery, which is the work of nature and not of the physician. Although the teachings of Magati had a large following, they fell into disrepute. Magni points out that the best results today are being obtained from the application of Magati's principles of immobilization and abstention from meddlesome interference.

Of the 3,618 limb wounds treated, 2,373 were wounds of the soft parts alone, 820 were fractures, and 425 were articular lesions.

In the treatment of fractures, Magni uses plaster casts. He does not remove bone chips, as he thinks, contrary to other expressed opinions, that a bone fragment provided with marrow is a point of permanent ossification, and even if it should die, it is eliminated or absorbed. He only removes projectiles if they are easily accessible or cause prolonged inflammation.

Articular lesions Magni generally treats by immobilization alone and has met with very satisfactory results. Only in a few cases was he obliged to intervene surgically. He thinks emphatically that immobilization is the best treatment for articular lesions.

Only 3 amputations were necessary, and among the total 3,618 cases there were only 8 deaths.

In summing up his observations, Magni thinks that none of the more recent methods of treatment are so satisfactory as that instituted by the early surgeons., i.e., reduction, retention, and immobilization of the limb in a good position by a plaster apparatus. These methods not alone help to prevent the spread of inflammatory processes which are generally located in the traumatized points, but they overcome them either directly or indirectly by favoring the formation of a circumscribed purulent collection which tends toward recovery after incision and drainage.

Ligation of the large vessels can be done at any point in their course provided no inflammatory processes exist; these, whether acute or chronic, hinder the establishment of venous collateral circulation, and gangrene of the tissues always follows in the vascular region of the ligatured vessel. The ligation of a large vessel in a limb has not such immediate disastrous consequences on the circulation as in the case of a vessel supplying the region of the brain.

The article is followed by a very extensive bibliography of several hundred war articles on wounds of the limbs and blood-vessels.

W. A. BRENNAN.

SURGICAL INSTRUMENTS AND APPARATUS

Fisher, W. E.: Thigh Stump Extension Splint. *Brit. M. J.*, 1918, i, 229.

The stumps following flapless amputations of the thigh that have come under the author's notice suffered from having been unprovided with some continuous extending force to counteract the natural tendency toward retraction of the soft parts that in these cases leads to conical stump formation.

If the retraction of the soft tissues is permitted to proceed unrestrained until such time as secondary amputation is performed, it will be the general experience that an undue length of the femur will require removal before the soft parts are capable of approximation, and the ultimate shortening of the stump may prove very disappointing.

The author's splint achieves the requirements in maintaining the necessary continuous uniform traction during all movements of the stump and positions of the patient in bed and during transport. The splint is improvised after the Thomas splint as modified by Jones for the arm. It is bent at the bars until the end meets the leather covered ring to which it is secured with tape. A length of about 20 inches of aluminium splinting is then bent in the form of a circle, loops within, and this hoop inserted and secured by tape or strapping between the ends of the bent bars of the Thomas splint.

Extension strapping is applied to the stump with tape attached to the ends of the straps to be attached to the splint for extension. The splint is put on with the ring fitting well up against the tuberosity of the ischium and extension is made by drawing on the tapes and tying them to the aluminium loop.

The splint is light and moves with all the movement of the stump, the flaps of which are held in extension and the splint itself secured by its extension bands. The open aluminium ring allows for dressings and there is free access to the wound.

V. C. HUNT.

SURGERY OF THE HEAD AND NECK

HEAD

Gamlen, H. E., and Smith, S.: A Study of the Inter-Relation Between the Radiography and Surgery of Gunshot Wounds of the Head. *Arch. Radiol. & Electrotherap.*, 1918, xxii, 240, 270.

In this very useful and interesting article the authors give their experience of the last eighteen months in which they have examined 1,500 cases of gunshot wounds of the head. They give a number of practical conclusions.

1. Method of taking radiographs. Stereoscopic views are essential. A compression cylinder with a paper air cushion is wedged between the head and compressor. A preliminary fluoroscopic screen examination is helpful to locate the missile and in addition a clean new lead wire ring is placed over the wound surface. The area of the wound should be nearest the plate and as near the central rays as possible, for by this means the maximum detail of the injured area is obtained. Seven positions are utilized as standards which bring out the variously located lesions to the best advantage.

2. Interpretation of radiographs. This is carefully considered and the distinguishing characteristics of bone fragments and various kinds of metal particles are explained. The pineal body, the salient points in the diagnosis of fractures, and the confusing elements of vessels, blood-channels, and sutures are described. A method of localization from the stereoscopic plates is illustrated.

3. Classification of the types of injuries with reference to need for surgical interference. No fracture seen in the X-ray examination may, since the introduction of the steel helmet, be a contra-indication against operative interference. Several patients who had worn the helmets showed injuries in the region of the apex of the temporal crest. They remained well for two or three days, then increasing optic neuritis, fits, and severe headache developed. Operation disclosed a practically normal bone, but beneath was considerable pulped brain and blood-clot.

Small bone cracks were usually left alone. Extensive fissured fractures without depression even running down to and involving the base were usually left alone unless urgent symptoms manifested themselves.

Gutter fractures with only a limited depression of the inner table were usually operated upon to remove the depressed fragments except over the longitudinal sinus. Gutter fractures with considerable in-driving of the inner table were operated upon in each case and penetrating fragments removed.

Penetrating wounds with no missile in the brain invariably require operative interference as the track is septic and has bone fragments in its course.

Wounds with one or more missiles retained in the skull bones were operated upon generally. When the missile lay just beneath, it was invariably removed. When the missile lies in the brain there is found a track of septic brain material with fragments in its course. In the beginning, there was a tendency to remove all missiles unless hopelessly inaccessible, but latterly more expectant treatment has been followed.

Perforating wounds with entry and exit wounds present in the skull are comparatively rare since the use of the steel helmet. C. B. HOLLINGS.

Japiot, P.: Radiography of the Lower Jaw and the Involvement of the Teeth in Fracture Cases (Radiographie du maxilliare inférieur; rapports des dents avec le foyer de fracture). *Lyon chirurg.*, 1917, xiv, 823.

Japiot calls attention to the growing importance of radiography of the maxillary region in war surgery and describes the technique.

About one thousand cases have been examined. The author gives the details of several cases with characteristic roentgenograms.

By inspection of the mouth alone it is impossible to detect the real lesions of the teeth; and only minute roentgenograms will give the following information:

1. Any dental fragments between the fractured bones will be shown, and also their differentiation from metallic fragments.

2. The fracture may involve the socket without injuring the corresponding tooth; or it may involve a wisdom tooth still in process of evolution. Radiography will show the condition and in some cases of necrosis, the roentgenograms show this to be the cause.

3. Teeth may sometimes act as projectiles and be driven into the neighboring soft parts, such as the tongue or even into the mandible.

An immediate X-ray enables the surgeon to know exactly the extent of the damage and to prevent infection by proper removal of the organic and inorganic foreign bodies. In old cases a roentgenogram may disclose the reason of persisting infection and fistulæ or of malunion or non-union. It will also be of service in the application of definite prosthesis by following the formation of sound callus.

W. A. BRENNAN.

Lewis, D.: Electric Burn Causing Necrosis of the Skull. *Ann. Surg.*, Phila., 1918, lxvii, 149.

The patient, aged 27, while working on a corrugated tin roof accidentally brought his head in contact with a live wire carrying an alternating current of 13,200 volts. He was immediately rendered unconscious. On regaining consciousness the patient was irrational and violent so that it required three men to restrain him. Six hours after the accident he became rational.

The physician who examined him shortly after the shock stated that the scalp over the junction of the sagittal and coronal suture had been burned away, leaving exposed a part of the parietal and frontal bones measuring 4 inches in diameter. A burn of the forehead on the right side and another over the right parotid gland were noted. This latter burn had extended deep enough to destroy the fibers of the facial nerve passing through the gland. The gland substance was also partially destroyed, as the patient had a salivary fistula. The feet were severely damaged by the electric shock. Above the right ankle anteriorly the skin was badly charred. All the toes with the exception of the little one were so badly torn and burned that they either dropped off or were removed.

Sloughing of the charred skin occurred much more quickly in this case than in similar cases which have been reported. Separation of the skin was completed in three weeks. Granulation tissue then developed rapidly and normally.

Almost eight weeks after the accident slight blurring of the vision of the left eye was noticed. Shortly afterward cataracts developed in both eyes.

The sequestrum finally became so loose that it could be easily removed with tissue forceps. The sequestrum contained a part of the sagittal and coronal sutures at the point of meeting and the parts of the parietal and frontal bone adjoining them. It included both plates. The dura which was exposed when the sequestrum was removed was covered with healthy granulation tissue. This granulating surface was grafted on the day following removal of the sequestrum with Thiersch grafts.

There were no changes in the respiratory, digestive, vascular or genito-urinary system. Muscular movements were made normally without any in-co-ordination. The patient complained of some numbness of the fingers, and also of some pain in the back, but there were no areas of anæsthesia.

EDWARD L. CORNELL.

Dretzka, L. J.: Fractures of the Skull. *J. Mich. St. M. Soc.*, 1918, xvii, 47.

The location of the lesion and determination of the extent of the intracranial damage are of first importance in fracture of the skull. Operative interference is imperative in all cases of depressed fractures, compound fractures, simple fractures with evident symptoms of hæmorrhage or intracranial pressure, and basal fractures with symptoms of increasing pressure.

If depression is definitely localized and not extensive, linear incision will suffice; if not localized, the "U" horseshoe incision is employed. When it is impossible to localize bleeding which wells up into the field of operation, the area can be packed with gauze to arrest bleeding. The packing is removed in twenty-four hours.

If the dura is extensively lacerated and its edges cannot be approximated, a fat or muscle implant may be resorted to, to cover the defect. In all basal fractures giving symptoms of increasing pressure it is advisable to resort to decompression.

The author presented in outline form the symptoms and differential diagnosis of fractures involving the vault and base of the skull. He also recorded a number of interesting illustrative cases.

In conclusion the following statistics may be of interest:

During the period between October 15, 1915, and December 1, 1917, 396 patients with fractures of the skull were admitted into the receiving hospital. Of this number, 186 were transferred to other institutions within twelve hours after admittance. The mortality rate of the remaining 210 cases was thirty per cent. One hundred and thirty-two cases out of the 210 required operative interference. From seventy to eighty per cent of the fractures of the vault involved the base as well. Thirty-five per cent of the 396 cases showed symptoms of alcoholic intoxication. M. A. BERNSTEIN.

Cushing, H.: Notes on Penetrating Wounds of the Brain. *Brit. M. J.*, 1918, i, 221.

The author in taking up his duties in a hospital to which he was attached endeavored to make an estimate of:

1. The operation mortality.
2. The proportion to one another of simple scalp wounds, cranial injuries without dural penetrations, and craniocerebral wounds respectively among all the cases forwarded from the field ambulances on the front concerned, with an initial diagnosis of "head or scalp wound."

During the first two weeks of the three months' period 49.3 per cent of the scalp wounds had dural penetration, of which one-third died without operation, the remaining two-thirds all being submitted to operation, and exactly half of the patients dying, giving a 50 per cent operation mortality for wounds of this type.

During the whole three months' period there came under the supervision of the author's team a series, 10.9 per cent of which proved to have merely scalp wounds, 23.7 per cent cranial wounds with intact dura, 60.7 per cent cranial wounds with dural penetration, and 4.5 per cent bursting fractures but with the dura and scalp both intact.

It was the penetrating wounds with which the author was chiefly concerned and a serious effort was made to see whether the accepted mortality of 50 per cent could not be lowered by improvement in technique and more intimate supervision of the individual case. Careful records have been kept of 225 cases, of which 6 died without operation; of the remaining 219, 133 proved to have dural penetration. These are divided into thirds corresponding to the consecutive months of the service: first 44 cases with 24 deaths, 54.5 per cent; second 44 cases with 18 deaths, 40.9 per cent; third 45 cases with 13 deaths, 28.8 per cent.

These percentages are practically end-results and seem to justify expecting 75 per cent of recoveries in an advanced hospital. During the three months' period an operation with certain technical devices applicable to the average penetrating wound was gradually evolved, to which the lowered mortality percentage in the series can be ascribed. Aside from the principle of track suction, there is nothing new about the procedure.

The main features of the operation lie in:

1. The removal *en bloc* rather than piecemeal of the area of cranial penetration.
2. The detection of the indriven bony fragments by catheter palpation of the track rather than by the exploring finger.
3. The suction method of removal of the disorganized brain.
4. The use of dichloramine-T in oils as an antiseptic.

The routine pre-operative neurological study of the case, stereoscopic X-ray negatives, the shaving of the entire scalp, the invariable use of a local anæsthetic, preferential radial (tripod) rather than flap incision, foreign body extraction with the magnet, closure of the wounds with buried sutures in the galea, the dressing of all serious cases in the operating room, all these steps were contributory to the successful outcome of the more severe cases.

At the casualty clearing station team work is of prime consideration to eliminate all delay. Each team should have an extra table to support the stretchers and cases can be constantly fed in and the various examinations and pre-operative preparations carried on under the surgeon's eye with little loss of time between operations.

Serious cranial operations should not be undertaken without a preliminary neurological study. Without such an examination, an operator cannot be sure whether the paralyses which are subsequently observed were pre-existent or due to the surgical manipulations. The question of justifiable opening of an intact dura or the need of secondary operation for symptoms of presumptive abscess may depend entirely upon the original neurological symptoms. Stereoscopic radiograms are invaluable.

The entire scalp should be shaved and sponged with alcohol and a bichloride of mercury solution instead of iodine or other staining solutions.

About an hour before operation a sedative is given, usually one-third of a grain of omnopon. Fifteen to twenty minutes before operation the lines of the proposed incisions are infiltrated with 1 per cent novocaine and adrenalin, 15 drops to 30 ccm. General narcosis increases intracranial tension, increases bleeding from the scalp and encourages rougher methods of operating, and it leaves many patients in a condition in which inhalation troubles are prone to occur.

For ragged or gutter defects over the vault the author prefers the three-legged or tripod incision. When the three flaps are reflected, ample exposure for trepanation is afforded, and if the flaps are sufficiently undermined, come together without undue tension.

The trepanation *en bloc* is done by trephining an opening to one side of the depressed area and with

rongeurs nibbling away bone until an opening of sufficient size has been secured. A more simple and satisfactory procedure is to encircle the area of depressed bone with a number of small punctures made with a perforator and burr and then to connect these with a linear cut.

In penetrating cases the proper and thorough cleansing of the track is the most important step in the operation.

The author has abandoned cutting away the torn, ragged margins of the dural opening, for it does not seem to be the source of infection. Retention of disorganized cerebral tissue which lines the track and in which indriven bone fragments are embedded is more serious.

A flexible, soft rubber catheter has proven satisfactory in determining the direction taken by the missiles and with it the narrowest track can be investigated with almost as great delicacy as by direct palpation. By attaching to the catheter a Carrel-Gentile glass syringe the softened brain may be sucked out, which should be repeated until the cavity is gotten as free as possible of disorganized cerebral tissue. At times pieces of bone come away in the eye of the catheter.

The purposeful incision of the dura in the area of a dirty wound must be done only in those cases in which the neurological symptoms indicate a serious local loss of function or in which the undamaged dura is tense and evidently overlies a clot or contused area. If under these conditions the disorganized matter is washed away until normal tension is restored and the membrane accurately closed, there is practically no risk of infection.

Regarding the removal of retained missiles, the author considers the middle ground position safest, namely, always to extract a foreign body if it can be accomplished without increasing the damage already done when the missile is deep, and always removing superficial ones. Extraction with a magnet is the only justifiable method. After the track has been cleansed, a wire nail is introduced down to the foreign body and the magnet connected to the nail for withdrawal of the foreign body if it is magnetizable.

The use of watery solutions of antiseptics in the brain is disappointing; however, the use of dichloramine-T produced a notable diminution in the number of infections. V. C. HUNT.

Foerster, O.: An Intramedullar Tumor Successfully Removed. *Berl. klin. Wchnschr.*, 1917, No. 14.

Foerster successfully removed an intramedullar tumor from a man of forty years. The disease began with urinary disturbances. Six months later there was complete spastic paralysis of both lower limbs with exaggerated reflexes and clonus; abdominal and cremasteric reflexes were lacking; there was complete retention of urine, and flaccid paralysis of the upper limbs. All the muscles innervated from the first dorsal segment and from the seventh and eighth cervical segments were completely paralyzed, while the muscles innervated from the sixth cervical and above were completely intact. The Wassermann reaction of the blood and cerebrospinal fluid was negative; the latter was strongly increased in albumin and xanthochromia.

Laminectomy of the third to the seventh cervical vertebræ and of the first and second dorsal was done. The dura was tense and on incision much fluid issued. The tumor was not found to be extramedullar, the medulla being normal on the exterior. On incision of the posterior cords longitudinally on the right side, an intramedullar tumor was found, its greatest width corresponding to the eighth cervical segment. It extended upward to the fifth and sixth, and below to the second dorsal. The tumor was removed easily and the dura, muscles, etc., sutured. Recovery followed. Microscopically the tumor was a glioma.

By degrees mobility of the limbs returned, but there is some ataxia. In the left arm all paralyzed muscles have recovered their function. In the right arm the greater part of the muscles have their functional capacity restored; there is still some paralysis of the thumb and of the fourth and fifth fingers. Bladder troubles have ceased. It is now one and one-half years since the patient was operated upon; improvement continues and there is no sign of recurrence. W. A. BRENNAN.

Conkey, C. D.: Ocular Symptoms of Brain Tumor. *J.-Lancet*, 1918, xxxviii, 70.

Conkey discusses the symptomatology of brain tumor from the standpoint of the ophthalmologist and aurist. He says that there are some classical symptoms that are common to all brain tumors and there are others that are dependent upon the region in which they are located. To the first group belongs that group of symptoms which, when existing together, are strongly indicative of a brain lesion causing pressure. This group consists of nausea and vomiting, headache, slow pulse, general convulsions, and choked discs. In the great majority of cases such a train of symptoms indicates the presence of a new-growth, though they may be present in brain abscess, meningitis, or tubercular deposits. Choked disc is the most valuable symptom, existing in 90 per cent of all cases of brain tumor in some period of its history. It frequently exists when no other symptoms are present. Its presence should arouse suspicion of the presence of a growth of some kind in the cranial cavity, but it is not always pathognomonic because a few spinal cord lesions may produce it, such as disseminated sclerosis, acute myelitis, tetany, and multiple neuritis.

He reports a case of an infant of six months with a complete paralysis of both arms and legs. The diagnosis of the attending physicians was poliomyelitis located high up in the cord. Examination of the eye-grounds showed a marked choked disc in each eye. He fails to state the outcome of the case or

whether the diagnosis of the attending physicians proved correct.

Choked disc has also been reported as occurring in some of the exanthemata, and also in typhus fever, diphtheria, influenza and whooping cough, albuminuria, diabetes, scrofula, and anæmia. He says the location of the brain tumor seems to greatly influence the choking. Tumors of the frontal lobe rarely produce choked disc, and tumors of the cerebellum nearly always do. As a general rule, tumors of the brain are known to produce choked disc in increasing proportion the farther they are located from the frontal region, and in decreasing proportion the farther they are located from the cortical region.

He states that nystagmus is another valuable symptom of cerebellar tumor. It is usually of the vestibular type where the eye moves from side to side with a slow movement in one direction, followed by a quick movement in the opposite direction.

Vertigo, inco-ordination, ataxia on the side of the lesion, diadokokinesis, loss or impairment of the arthrodial sense, and disturbance of equilibrium are also found in cerebellar tumors. Hemianopsia is one of the most valuable signs pointing to brain lesion. It may be produced at any point from the optic chiasm to the occipital lobes.

When paralysis of the cranial nerves occurs in association with homonymous hemianopsia, it is in favor of a growth below the occipital lobes. Tumors of the pituitary body are easily confounded with those of the occipital lobes. They can be differentiated by reason of the fact that the hemianopsia of the occipital lobes is homonymous and that of pituitary tumors is usually bitemporal.

Tumors of the pons produce numerous and diversified symptoms, owing to the numerous important structures crowded together in this vital region. When the tumor is confined to one side of the pons it may cause a paralysis of the sixth nerve, the trigeminus, and the facial on the same side, causing loss of power of the external rectus muscle and a part or an entire side of the face. When the tumor lies low in the pons, branches of the acoustic nerve may become involved, producing deafness on the same side.

In those cases where several of the ocular nerves are involved, causing multiple paralysis, the lesion must be in the base of the brain in the middle cerebral fossa, for it is only in this region that all the ocular nerves could be encroached upon by a new-growth.

He reports several cases illustrating the different varieties of brain tumors. G. W. Hochrein.

Hassin, G. B.: Histopathological Studies on Brain Abscess. *Med. Rec.*, 1918, xciii, 91.

The author describes two kinds of brain abscess: one a diffuse infiltration of the brain tissues with pus; the other an encapsulated abscess. He reports and describes the histological elements found in each.

In the first variety he found: (a) polymorphonuclear leucocytes; (b) Mechnikoff's macrophages; (c) polyblasts; (d) plasma cells.

Ordinary brain tissue cells were either absent or greatly changed. Nerve fibers were much less changed.

In the encapsulated case the pus consisted of granular bodies and a few polymorphonuclears. The abscess wall consisted of three layers. The inner layer consisted of collagenous fibers without interspaces and very few vessels; the middle zone was thicker, rich in capillaries, plasma cells, polyblasts, fibroblasts, and clasmatocytes; the third layer showed many clasmatocytes, old connective tissue, large fibroblasts about the vessels, plasma cells, and polyblasts.

The author believes that these various pathologic cells are all derived from the blood-cells and he claims that the transitions have been seen in various instances. H. J. Van den Berg.

Long, J. W.: Traumatic Brain Surgery. *South. M. J.*, 1918, xi, 31.

Long classifies brain injuries as: (1) brain traumas without visible wounds; (2) scalp wounds with no apparent fracture; (3) tangential, or gutter, fractures of the skull; (4) depressed fractures of the skull from direct blows; (5) penetrating wounds of the brain classified as: (a) puncture wounds, as from a bayonet, (b) wounds from a missile, as a bullet, lodged in the brain, (c) through-and-through wounds.

The results of brain trauma are: (1) death, immediate or within a few hours; (2) shock, concussion and compression; (3) increased intracranial pressure due to (a) shock, (b) hæmorrhage, (c) œdema, (d) infection; (3) infection due to (a) meningitis, (b) ependymitis, (c) cerebritis; (4) cerebral hernia, or fungus.

The treatment of brain traumas consists of primary cleansing of the wound; removal to a hospital for operation; taking of X-ray pictures; excision of the scalp and bone wounds; discriminating removal of foreign bodies; covering of the exposed brain; complete or partial closure of the wound; only superficial drains, except in the case of abscess; lumbar puncture, repeated as indicated; prolonged rest in bed.

This rapid survey of conditions found in brain trauma leads irresistibly to the conviction that the three great things with which the brain surgeon has to contend are: first, increased intracranial pressure; second, infection; and third, cerebral hernia. P. G. Skillern, Jr.

Morpurgo, B., and Ferrio, L.: Meningococcic Septicæmia Without Meningitis (Setticemia meningococcica senza fenomeni di meningite). *Gior. d. Accad. di med. di Torino*, 1917, lxxx, 386.

Cases of true so-called meningococcic septicæmia are very rare. The author refers to a few cases

reported in literature of a low remittent fever, unaccompanied by meningitic phenomena in which the presence of meningococci in the blood was shown.

The author reports such a case of remittent fever with a species of purpura somewhat like that which is termed "spotted fever." There were no meningitic phenomena. Repeated blood cultures showed the presence of organisms with all the characteristics of meningococci. W. A. BRENNAN.

Segura, E. V.: The Treatment of Hypophyseal Tumors (Tratamiento de los tumores de la hipofisis). *Rev. Asoc. méd. argent.*, Buenos Aires, 1917, xxvii, 984.

Segura reviews the various operative methods of approaching and removing tumors of the pituitary body. In his own practice he adopts Hirsch's method with a slight modification, which consists in detaching one of the mucous membranes in order to render the sphenohypophyseal cavity accessible by a nasal fossa. This modification he thinks very important when treating neoplasms originating from the sella turcica which become extrasellar, penetrating into the cerebral cavity and consequently incapable of total extirpation. The modification is also applicable to those cases in which, although the tumor is intrasellar, it has a tendency to recur. By preserving an easy open route of access to the sphenoid cavities and keeping in contact with the sella turcica the operation provides the best means for later application of radiotherapy when this is indicated.

In his last seven operated cases by this technique Segura obtained excellent operative results; all healed by first intention and in a very short time.

W. A. BRENNAN.

NECK

Patel, M., and Arcelin, M.: Extraction of Foreign Bodies from the Upper Part of the Prevertebral Region (Extraction des corps étrangers de la partie haute de la région prévertébrale). *Rev. de chir.*, Par., 1917, liii, 640.

The authors point out the difficulty of extracting projectiles from the upper part of the prevertebral region, in the neighborhood of the base of the cranium. They have had to operate in six such cases, details of which they give. The diagnosis is made clinically and the localization is confirmed by a series of radiologic examinations.

The prevertebral region may be approached by these routes:

1. Pharyngeal route: The incision is made in the posterior wall of the pharynx. This route, although apparently easy, is not so. The depth of the region, hæmostatic difficulties, and the difficulty of keeping the head in good position are opposing factors.

2. Cervical route: The incision is cervical on the anterior edge of the sternomastoid, similar to that for ligature of the external carotid. The prevertebral region can be reached by passing inside the vessels and stripping the posterior pharyngeal wall. But the route is difficult and very dangerous owing to tearing of the peripharyngeal plexus. The authors think this route should be avoided.

3. Cervical route. This is especially the route of choice, and it permits direct access to the prevertebral region by drawing the vessels and nerves forward. The incision starts from the posterior edge of the mastoid, follows the border of the sternomastoid until this muscle is crossed by the external jugular vein. It then ascends as far as the occipitalis and sufficiently deep to allow section of the splenius. The splenius is sectioned at its insertion in the mastoid. This is important, as the splenius is the key to the prevertebral region, and if it is intact, exploration is extremely difficult. The vessels and nerves with the internal jugular as adjacent nuclei are gently liberated and together with the sternomastoid are strongly retracted vertically by an assistant. When these preliminaries have been executed, the surgeon can easily explore the prevertebral region with the right index finger. Adhesions can be separated with a sound. When the projectile is discovered, it is extracted by forceps.

In their six cases the authors had only one operative accident, namely, an injury to the internal jugular. Radiograms showing the position of the projectile are given for each case.

W. A. BRENNAN.

Terry, W. I.: Operative Treatment of Goiter. *Northwest Med.*, 1918, xvii, 20.

It should be remembered that iodine should be cautiously used in the treatment of any goiter. Adenomata are not curable by medicine or by X-ray.

The treatment of exophthalmic goiter should be carried out by the physician and surgeon co-operating for the good of the patient. Medical treatment is seldom permanent and surgery is necessary to effect a cure. Each case should be studied individually and an operative time selected during a stage of comparative quiescence. The psychology of the patient should be analyzed and every effort made to eliminate fear. Ligation of one or more thyroid arteries is often advisable preceding resection.

The Kocher collar incision is used. The sternohyoid and sternothyroid muscles are separated longitudinally in small goiters and divided transversely high up in the large types. It is well to leave portions of both the inferior and superior poles so that the parathyroids will not be imperiled. The recurrent laryngeal nerve should be avoided by leaving the posterior sheath of the thyroid. Adenomata may be shelled out, and all such tumors should be removed; otherwise a recurrence is likely.

The divided ribbon muscles must be sutured and

the platysma carefully approximated. Drainage is not necessary if hæmostasis has been good, but where a large raw surface of the gland is left, a small folded rubber dam drain is best. As to the secretion of the thyroid causing toxic symptoms by absorbtion from the wound, the author thinks the idea a myth.

Terry reports 445 operations on 425 patients, with 10 deaths. There are 161 simple and 264 hyperthyroidism cases. The mortality occurs entirely in the hyperthyroid cases. Among the patients, 12 per cent are males and 88 per cent females.

CARL R. STEINKE.

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Lockwood, A. L., and Nixon, J. A.: War Surgery of the Chest. *Brit. M. J.*, 1918, i, 105, 145.

This article is another evidence of the general trend in the direction of more active surgical measures; and the authors emphasize the fact that any discussion upon war surgery of the chest must now include abdominothoracic as well as thoracic wounds. There is some danger at present of radical operation being performed in some cases in which it is neither necessary nor indicated, and this is especially true of pure hæmothorax. Unless surgeons are able to keep their cases under observation until convalescence is complete, it is impossible for them to form correct conclusions as to the value and ultimate results of their treatment.

The authors were able to do this during the entire Somme offensive from July, 1916, and the same has been the case since August, 1917. Such opportunities have not existed in any other British front unit.

Up to the middle of 1916, wounds of the chest were for the most part treated expectantly, later operations being dependent upon whether or not infection supervened.

At the advanced dressing stations cases of open pneumothorax are greatly improved within an hour or two if the wound is carefully cleaned without an anæsthetic and the skin sutured with silkworm-gut through a plug of gauze so that there is no leakage of air. After such temporary treatment patients must be sent to the casualty clearing station. At the latter they are placed between warmed blankets and are given hot drinks but no stimulants. Continuous proctoclysis of sodium bicarbonate and glucose, 5 per cent of each in water, is started and intravenous sodium bicarbonate, 2 per cent, is given if required. In severe cases blood transfusion is performed. Urgent dyspnœa from hæmothorax or pneumothorax must be relieved before operation by aspirating. If fresh hæmorrhage is suspected, the aspiration should be partial and combined with oxygen replacement.

If the active resuscitation just outlined can be carried out and the services of an expert radiographer are available, then surgical measures which these cases require should be attempted, provided also that the physical signs can be carefully studied, and finally that most perfect asepsis can be secured.

Operation is especially indicated where: (a) early evacuation will not be necessary; (b) injury of the diaphragm is suspected; (c) open pneumothorax exists; (d) a badly crushed chest is found even though there is no external wound; (e) a large missile has transversed the pleural cavity, whether lodged in the chest wall, pleural cavity, lung, mediastinum or pericardium; and finally (f) on all very acutely infected cases although the missile is not retained.

Repeated X-ray examination is essential during the progress of the case. An aluminum-topped combined operating and X-ray table of the Bonnette Eclipse du Dessane is of the greatest service. The physical examination should at first be limited to ascertaining whether an immediate operation is advisable or possible. If the missile has traversed the mediastinum and traversed both sides of the chest, early operative treatment should never be undertaken. The presence of considerable surgical emphysema obliterates or distorts every other physical sign except the position of the heart. The authors have only observed the condition of massive collapse of the lung upon the non-injured side in very few cases. Only local anæsthesia must be used in cases with bronchopneumonia on the uninjured side.

Signs of involvement of the heart or pericardium do not constitute a contra-indication to operation. The level of dullness does not indicate the size of a hæmothorax and bronchial breathing is not uncommon over a hæmothorax. The latter may occur although the pleura has not been penetrated. Signs of increasing effusion after twenty-four or forty-eight hours are scarcely ever due to active hæmorrhage and the authors have only seen recurrent hæmorrhage in five cases.

The patient is given omno-scopolamine, one ampule, an hour before operation, and if not sleeping, is given one-half an ampule half an hour before being taken to the operating room. A half sitting posture with the injured side dependent is the most comfortable. If he cannot be so placed, the lung should be grasped with a forceps of the Collin pattern immediately on opening the thorax and sufficient traction made to correct the displacement of the mediastinum.

Local anæsthesia is used until the hand is inside the chest, or if the patient is restless, then only light nitrous oxide. The most serious cases can be thus operated upon, and better control of movements

of the lung, mediastinum and diaphragm is permitted. The two-stage operation is only possible with this method of analgesia. Ether should never be used. Unless primary union is obtained, the patient is worse off; hence bold and thorough excision of the wound area is necessary.

After the track of the missile is excised, gloves and instruments are changed and the skin again cleansed and fresh towels applied. When the position of the wound will permit, resection of the fourth rib from the mid-clavicular to the posterior axillary line furnishes the easiest access to the thorax. One must be careful not to increase shock by too powerful a retraction.

Mop out the chest, check fresh bleeding and then look for laceration of the diaphragm. On the right side, excise the track of the missile widely enough to expose the liver, remove the missile if t is in the liver, and cleanse out its track with a curette and a swab wrung dry out of saline and ether. If oozing occurs, insert deep catgut sutures. The very low resistance of the hepatic tissues to infection makes it important to remove all sources of infection. Close the wound in the diaphragm, but do not suture the diaphragm to the chest wall, as advised by DePage. If other viscera of the abdomen are injured, deal with these through an abdominal incision.

Now the lung, held by a Collin forceps, is brought into the opening and the missile or fragment of rib removed and the track in the lung closed, using a non-cutting blunt needle. Partial lobectomy may be necessary if there is extensive laceration. If an open bronchus is found, it can be closed by crushing and ligation. Care should be taken to remove all blood-clots, pieces of cloth, fragments of bone, etc., from the thoracic cavity. This can be done better by sponging than washing out, first with saline, then with warm ether swabs.

Always close the chest unless there is extensive gas gangrene of the lung. Do not waste time on the parietal pleura as it can be included in muscle sutures. The chest must be hermetically closed with the first layer of muscles or else pocketing will occur, pleural effusion accumulate, the incision will break down and the operation fail. Keep a thick sponge in the pleural wound during the entire operation except when the hands are actually in the chest. A 7-inch adhesive strip is of great aid in keeping on the dressing, leaving the sound side free. Keep the patient semirecumbent, inclined toward the injured side.

A two-stage operation is indicated if the exit and entrance wounds are wide apart, where gross lesion of the bone or extensive destruction of the tissues necessitates an extensive operation of both wounds. In such a case, enter the chest through the wound giving freest access to the pleural cavity and to the part probably damaged. Operate as outlined above, but leave the patient on the table surrounded by hot water bottles, giving intravenous sodium bicarbonate or blood transfusion if required, or sodium bicarbonate and glucose, 8 ounces per rectum. If the patient is restless, give half an ampule of omnopon and then in one to two hours deal with the other side; paravertebral anæsthesia is often unnecessary here, only local sufficing. Bilateral lacerations of the diaphragm should be dealt with by a two-stage method.

Injuries of the heart and pericardium are best dealt with by a parasternal flap of the fourth and fifth, or the fifth and sixth costal cartilages, depending on the probable site of the lesion. This route also gives free access to the pleural cavity. If the missile has passed through the pleural cavity and lodged in the mediastinum, especially high up, it is wise to enter the mediastinum through the sternum. Remove the missile, cleanse the bed and track thoroughly and close the pleural opening to prevent any leakage from the mediastinum into the pleural cavity. It is hard to deal with the mediastinum through an ordinary costal incision.

Phrenic nerve injury is the cause of many early deaths on the battlefield.

Postoperative treatment requires frequent change of position, but the injured side should be kept dependent. Give plenty of opiates, also glucose and sodium carbonate, 5 per cent of each. The patient should sip 8 ounces of a 2 per cent glucose solution every two hours. Aspiration is done as a routine after eighteen hours and on the third day. Keep the patient in the open air as much as possible. Explore the chest often to prevent fluid from accumulating. No reliance is to be placed on physical examination, only on the X-ray and exploration.

Good team work between the surgeon, the physician, the X-ray man and the anæsthetist is essential. D. N. EISENDRATH.

Hutchinson, W.: The Treatment of Wounds of the Chest, with Special Reference to Infected Hæmothorax. *Brit. M. J.*, 1918, i, 196.

Four classes of chest wounds should be distinguished. They are:

1. Non-infected hæmothorax or pneumohæmothorax.
2. Open pneumothorax.
3. Infected hæmothorax.
4. Foreign body in the lung or the pleural cavity.

Treatment in simple non-infected hæmothorax or hæmopneumothorax consists in merely aspirating the blood from the pleural cavity. This should be done if dullness extends more than two finger-breadths. Of 450 cases in the author's series, 368 were aspirated. A fair sized trocar is used after cocaine anæsthesia and a small knife slit in the skin. If there is a large amount of blood clot, the author believes the chest should be opened, the blood and clots aspirated, and tight closure made with a final aspiration of retained air. If blood is allowed to remain a long time, the lung becomes bound down by adhesions and a large proportion eventually becomes septic.

Open pneumothorax is treated by prompt closure after cleansing of the wound and pleura. Shock and danger of infection is greatly diminished by this procedure. If there is likelihood of infection, 3 ounces of 1:5,000 flavine solution is left in the chest.

In infected hæmothorax it is impossible to aspirate the clot which contains the infection. It is also impossible to sterilize the clot by any known method. A thoracotomy is therefore done under nitrous oxide and oxygen anæsthesia. The hand is inserted, light adhesions are broken down and the clot removed. The cavity is washed out with saline solution and the chest closed, mopping a small quantity of antiseptic over the lung and pleura.

The serum that collects and air left in are aspirated in forty-eight hours. Three or four aspirations are necessary during convalescence. Eusol, "bipp," flavine and saline have been variously used in treating 29 cases in this manner. Certain types of infection seem to lend themselves to this form of treatment better than others. Thus of 11 cases of bacillus aerogenes capsulatus infection, only 3 had to be reopened. Of 7 cases of streptococcus infection, 6 were reopened. Of the whole group of 29 cases, 13 were reopened.

The treatment of a foreign body in the lung or pleural cavity must vary with the three types of hospitals, e.g., the casualty clearing station, the base hospital in France and the base hospital in England. As a result of experience with 450 cases and from reports from other surgeons, Hutchinson is convinced that no attempt should be made to remove a foreign body from the lung while the patient is in a base hospital in France.

Of 27 deaths that occurred in this series, 11 died of septicæmia, and four due to pocketing, all in drained cases. Gas gangrene of the chest wall was present in three cases. C. A. HEDBLOM.

Eastman, J. R.: Wounds of the Thorax in War. *Med. Rec.*, 1918, xciii, 265.

Non-penetrating wounds involving the superficial chest coverings may be associated with injury of deep structures. They are cleansed and covered with dry or moist antiseptic dressings. Non-penetrating wounds involving the deeper structures of the chest wall are nearly always infected and may be serious when there is injury of the internal mammary artery, the symptoms of which are: general signs and symptoms of hæmorrhage; severe hæmorrhage from a wound traversing the course of an artery; difficulty and pain in swallowing; extra pleural hæmatoma evidenced by flat percussion note; hæmatemesis absent. The wound should be enlarged by an incision parallel to the costal cartilages and both ends of the vessels ligated. If the ends cannot be found, make other transverse incisions above and below to ligate both ends. Treatment of deep non-penetrating wounds of the chest wall consists in the removal of foreign bodies and the maintenance of antisepsis, to which is added strapping of the chest to provide immobilization.

Penetrating wounds of the chest wall may be associated with fracture of bone; may involve the pleural cavity, the lung or other organs of the chest. Partial fractures of the rib receive ambulant treatment unless associated with hæmothorax or pneumothorax. Complete fracture should be treated in the recumbent posture. Extensive emphysema may be reduced by introducing one or more aspirating needles and allowing them to remain for several hours. In threatened emphysema an incision down to the fractured rib should be made under local anæsthesia to allow escape of the air. In penetrating injuries involving the pleura to the exclusion of the lung, the principal symptoms are those of hæmothorax or pneumothorax or both, with dyspnœa but without hæmoptysis. The common complications are pleuritis and empyema. The symptoms in chest injuries involving the lung are those of shock, hæmothorax and pneumothorax with cutaneous emphysema, hæmoptysis, pain, cough and dyspnœa.

The primary treatment of penetrating chest wounds consists of control of external bleeding, cleansing of the external wound, application of a sterile or antiseptic dressing, rest with the chest elevated, heat and morphine. In cases manifesting shock, proctoclysis and subcutaneous or intravenous injections of normal saline solution are to be used promptly. Primary operative intervention for control of bleeding of the pulmonary vessels has in the main given way to conservative or expectant treatment, though some have made thoracotomies. In clean-cut bullet wounds, the preponderance of opinion favors conservatism.

The author then considers the common complications of penetrating chest wounds. Hæmothorax may be sterile or septic. Sterile hæmothorax is treated in the field by the application of a sterile dressing to the wound, strapping of the chest, and administration of morphine. Later the principal indication of treatment consists in rest in bed. If the accumulation of blood is extensive, then aspiration may be performed. After the danger of bleeding has passed the patients should be exposed to fresh air and sunshine. Absorption may be promoted by electric light baths and breathing exercises. Artificial pneumothorax is recommended in obstinate cases to loosen adhesions and promote absorption.

Treatment of septic hæmothorax consists chiefly in thoracotomy with removal of the infected fluid and subsequent irrigation. When empyema is present, thoracotomy with rib resection is required for drainage. Lung hernia when fresh should be reduced by pressure after disinfection of the external wound. If one or more ribs offer resistance to reposition they should be resected. The sudden entrance of air into the pleural space should be prevented by the use of gauze compresses. If the lung hernia is several hours old and the external

lung tissue is collapsed or gangrenous, it may be excised by ligating it *en masse* with silk, then dividing it distal to the ligature with actual cautery.

Concerning pleuritis, pneumonia, and bronchitis it is noted that they appear frequently after chest injury. Lung abscess and gangrene are rare. Extensive lacerations of the heart may occur. Wounds of the pericardium cause hæmorrhage with accumulation of blood in the pericardial sac, causing pressure on the heart and symptoms very like injury of the heart itself. Treatment consists in removal of the blood and ligation of the bleeding vessels. Pus in the pericardial sac requires ample drainage.

Injuries of the large vessels of the chest are practically always immediately fatal. Injuries of the thoracic duct often lead to fistula and chylorrhœa or chylothorax. Wounds of the diaphragm are of interest in connection with associated injury of other organs. Violent compression of the thorax may produce hæmorrhages from the small veins of the head and neck with ecchymoses into the conjunctiva and ear-drum. Lodged bullets in the chest should not be removed unless they are superficial or are causing untoward symptoms by their presence. E. B. FREILICH.

Dobson, J. F.: A Preliminary Note on the Treatment of Infected Hæmothorax. *Brit. M. J.*, 1918, i, 148.

Dobson says resection of the rib, the evacuation of fluid and clots, the removal of foreign bodies when possible, and immediate closure of the wound is ideal and is being more and more widely adopted at the casualty clearing stations, but is only applicable in the earliest stages of the infection. When symptoms recur, these patients very rapidly become seriously ill. Those cases where infection has passed beyond the contents to the walls of the pleural cavity cannot be treated in this way.

Dobson uses a special silver cannula without a terminal aperture but twelve small lateral holes. The eighth rib is resected, Tuffier's rib spreader inserted, the pleural cavity wiped out, the foreign body removed and other complications dealt with. The cannula is then inserted through the third or fourth interspace about, or external to, the mammary line. The original incision is then closed around a tube long enough to reach into a bottle of antiseptic fluid and the cavity is then irrigated every two hours with Carrel-Dakin solution. The infection is quickly controlled, the lung expands well, and the general condition improves rapidly.

Certainly at present the treatment of badly infected hæmothorax does not give good results. Many cases discharge for a long period and only heal after much falling in of the chest wall or after wide resection of the ribs. If the lung does not expand, the author does not hesitate to reopen the wound, free the adherent lung and close the chest.

D. N. EISENDRATH.

Stoney, R. A.: The Modern Treatment of Empyema by Antiseptics. *Brit. M. J.*, 1918, i, 198.

Acute empyema is easily cured by simple surgical methods. Through neglect or inefficient surgical treatment the lung and diaphragm become covered by granulation tissue which by its further development into fibrous tissue renders the cavity noncollapsible and chronic empyema results. This condition is difficult or impossible to cure even by extensive Estlander or Schede thoracoplasty.

Most if not all cases can be cured without resorting to such dangerous and mutilating operations, because it is not necessary to obliterate the pleura space but merely to render its walls sterile, and this is possible by frequent washings with hypochlorite solution. The treatment is not dangerous provided a free exit for the fluid is provided.

The earlier the treatment is instituted, the sooner and more surely will a cure be obtained. The opening is most suitably made by removing one inch of the eighth rib in the scapular line. Three illustrative cases are reported. C. A. HEDBLOM.

Gatellier, I.: Acute Mediastinal Emphysema of Traumatic Origin (L'emphysème médiastinal aigu d'origine traumatique). *Bull. et mém. Soc. de chir. de Par.*, 1918, xliv, 74.

Nine observed cases and 11 investigations on cadavers have given Gatellier the opportunity to study the technique, treatment and pathogenesis of mediastinal emphysema. In 209 wounds he has observed 5 cases of acute emphysema of the mediastinum.

The symptomatology of acute traumatic mediastinal emphysema differs from that of acute emphysema which is observed in children in the course of whooping-cough and bronchopneumonia. Gatellier has never observed either obliteration of the intercostal spaces nor crepitation synchronous with cardiac systole in the precordial region. Considerable circulatory disturbance with cyanosis and intense dyspnœa are the fundamental symptoms, with the appearance of gaseous infiltration above the sternum.

A wound of the chest, intense dyspnœa, disturbance of the venous neck and facial circulation, and the finding of an elastic episternal notch cushion without cervicofacial emphysema are, according to Gatellier, the first symptoms which call for immediate surgical intervention.

In 5 experimental investigations of emphysema Gatellier made a direct insufflation of the mediastinum by the eighth intercostal space. He produced a mediastinal infiltration ascending toward the neck. In 5 other cases by producing a subcutaneous emphysema he was not able to produce infiltration of the mediastinum.

He propounds two different pathogenetic theories: (1) when pneumothorax is created in the course of an onset of cough the mediastinal pleural tear is enlarged and a valve is established which causes progessive insufflation of the mediastinum; or (2)

in the region of the pulmonary tear an interstitial emphysema is constituted which in its progression invades the mediastinum. Gatellier especially remarks that mediastinal emphysema always begins with the mediastinum and progresses always from the thorax to the neck.

In treatment Gatellier insists that the only method to remedy emphysema is a direct intervention which permits evacuation of the mediastinal air. A suprasternal incision alone reaches the mediastinal cavity. He rips the aponeurosis, penetrates the peritracheal and peri-œsophageal anterior and posterior spaces. The technique is described. It must be fully and thoroughly carried out or it will not give results. Both anterior and posterior mediastinal spaces must be reached directly. If properly done, it generally brings about recovery.

W. A. BRENNAN.

TRACHEA AND LUNGS

Tilley, H.: The Treatment of Foreign Bodies in the Lower Air Passages and the Œsophagus, or the Direct Method. *Lancet*, Lond., 1918, cxciv, 283.

The general term "endoscopy" includes those methods by which a direct inspection may be made of the lower air passages, the œsophagus, and stomach.

The mode of access of foreign bodies to air passages is by inhalation, during ill-timed inspiratory effort, or during anæsthesia or unconsciousness from other cause. Impaired muscular activity or sensation from tertiary syphilis, malignant disease or tuberculous ulceration may be contributing causes. Foreign bodies in the œsophagus are lodged there during swallowing.

There may be no history of the accident. Cough and dyspnœa when present indicate a foreign body in air passages. Difficulty in swallowing points to the œsophagus. A foreign body may be present in the absence of symptoms. A pin impacted in the larynx thirteen years caused only occasional fits of coughing. The only symptom may be a foul breath. A large foreign body in the œsophagus may mislead the surgeon to perform tracheotomy because of dyspnœa and stridor due to pressure on the trachea.

The early symptoms, however, are as a rule sufficiently characteristic and localizing. In general the symptoms are: (1) obstructive, from the size of the foreign body or from spasm; (2) irritative, produced by the presence of the foreign body; or (3) inflammatory.

Foreign bodies lodged in tonsils or pillars of the fauces produce pain of a pricking nature felt most on swallowing. In the pharynx a large bolus of food may lodge and cause difficulty in swallowing and in breathing. Smaller and sharper foreign bodies may cause dysphagia and inflammation. In the larynx intense croupy cough, dyspnœa and aphonia are the common and immediate symptoms. A large object may produce sudden death by obstruction and by spasm. Small sharp objects lodging in the aryepiglottic folds may cause pain, inflammation or abscess formation.

A small foreign body in the trachea may produce no symptoms, unless it is in the sensitive subglottic region when violent coughing and laryngeal spasm are characteristic. In the bronchus, if there is no obstruction there may be no symptoms until irritation or inflammation is set up. Complete obstruction of the bronchus will involve retention of secretion followed by bronchiectasis, septic pneumonia, abscess or gangrene. Hæmoptysis and pyrexia occur late and are uncommon. Unilateral bronchiectasis in a child should always excite suspicion of a foreign body in a bronchus.

In the œsophagus the vast majority of foreign bodies lodge in its upper third opposite the upper thoracic aperture. A small foreign body may cause obstruction through spasm or through damming back of food. Dyspnœa, cough, and finally a fistula between trachea and œsophagus may result.

In a suspected case, besides the history a local and general examination of the neck and chest, radioscopy and endoscopy must be made. X-ray is of great importance and may help in localization by showing secondary lesions even when the foreign body does not obstruct the X-rays. On the other hand, a metallic body may not show in a stout person.

A general anæsthetic may be used and is indicated where a foreign body is tightly impacted. Local anæsthesia relieves discomfort and minimizes reflex activity. No anæsthetic is used in small children. The patient should lie on his back with shoulders slightly raised and head thrown well back.

An instrument having distal illumination is the best. Strict asepsis, a plentiful supply of swabs, and some form of suction apparatus for keeping the field free of mucus and blood are important in technique.

As a rule urgent dyspnœa demands immediate tracheotomy. The bronchoscope can then be passed through this opening. If dyspnœa persists after removal of the foreign body, intubation or in extreme cases tracheotomy may be necessary. Œsophagoscopy is as a rule not so urgent as bronchoscopy but is definitely indicated in all cases of lodged foreign bodies except in cases of traumatism or inflammation of the œsophagus, in some cases of aneurism or serious vascular lesion, and in cases in too critical a condition to withstand the procedure. The mortality in skilled hands is very low, but the "occasional operator" will be a source of danger to the community.

C. A. HEDBLOM.

Tewksbury, W. D.: Treatment of Non-Tuberculous Lung Abscess with Pneumothorax; Report of Ten Cases. *J. Am. M. Ass.*, 1918, lxx, 293.

Tewksbury reports 10 cases of abscess of the lung following operations on the nose and throat, treated with pneumothorax. Eight of the cases

were of less than six weeks' duration. Diagnosis of abscess was made in all cases within two weeks following operation. Pneumothorax treatment was begun from two weeks to two months following the time of diagnosis. Two to ten treatments were given at short intervals, during a period of two weeks to two months. Six of the patients were cured and two died, one from rupture of the abscess into the pleural cavity. The presence of pleural adhesions was probably the cause of the rupture.

Two chronic cases, of one and two years' duration respectively, were also treated but without material benefit. C. A. HEDBLOM.

Piéry, M.: War Injuries of the Lung (Le poumon de guerre). *Rev. gen. de path. de guerre*, Par., 1917, No. 5.

Piéry points out that whereas before the war surgeons approached the lung in a more or less timid fashion, they have become bold and sure as a result of the recent experience gained by them in war surgery.

Practically all war wounds are caused by projectiles of one sort or another; very few stab wounds are described up to date. These projectile wounds can best be considered under the following five heads:

1. Simple chest wounds with hæmopleuropneumonic symptoms.
2. Complicated chest wounds.
3. Etiological and pathological factors.
4. Symptomatology of chest wounds.
5. Treatment of chest wounds.

Under the first head of simple chest wounds, Piéry says that the really striking thing is the fact that simple war wounds are practically always accompanied by a definite symptom complex, the only variation being in the intensity and duration of the symptoms. This symptom complex he has called syndrome hæmopleuropneumonic, because anatomically it is characterized by hæmothorax with an accompanying pneumonia.

There is first shock immediately followed by dyspnœa, both of varying intensity, and followed in turn by more or less inconstant hæmoptysis, rarely profuse. The following day there appear physical signs that are quite striking in their constancy. Over the lower third of the lung posteriorly there is flatness, absence of voice sounds, absence of or diminished breath sounds; from the middle third, dullness with normal or exaggerated voice and tubular or almost tubular breathing.

The radioscopic examination shows a large, dark shadow replacing the clear lung area ordinarily seen under normal circumstances, which extends over the lower two-thirds of the wounded lung. This shadow fades out gradually with no tendency to demarcation into two zones. This X-ray examination may also disclose a projectile.

Exploratory aspiration (indispensable in these cases) confirms the diagnosis. A cell count of aspiratory fluid shows: (a) a gradually rising polymorphonuclear leucocytosis during the first five or seven hours, followed by (b) a drop in the number of leucocytes due to dilution of the blood and lasting four to thirty hours, followed by (c) increase in leucocytosis, but chiefly of the eosinophile and mononuclear variety. This last phase ushers in the absorption and lasts eight to twenty hours.

Hæmoptysis, immediate, delayed and secondary, cough, and dyspnœa require no special description. The elevation of temperature which occurs in these cases, however, merits special mention because it is one of the most characteristic symptoms. It begins within twelve to twenty-four hours, and then after the third or fifth day maintains a height of about 101.5° to 102.5° F. for about fifteen days. Defervescence occurs by lysis and is usually completed in about three weeks.

These cases may clear up completely, the physical signs or remnants of them existing from three to five weeks, if the patient is in good physical condition, or the patient may pass into the more serious form with a marked elevation of temperature, lasting from four to six weeks, without any confirmatory evidence of empyema or other intercurrent affections. This fever is due to pneumonia. Piéry insists that the symptoms are due to pneumonia, even if the symptoms be lacking and physical signs not in evidence. Cases of this type will frequently drag along from six to eight weeks.

The significant fact is that both the mild and severe cases, provided there are no complications, always terminate favorably. Piéry treated twenty-five patients with simple penetrating wounds, with one hundred per cent of recoveries. This does not mean that there is complete *restitutio ad integrum*, for about one-third of these cases develop recurrent bronchitis and many of them have more or less persistent chest pains, dyspnœa on effort, dry cough, and general irritability over quite a long period of time. In general, however, over fifty per cent of the cases lead active lives and are fit for army duty.

Under the head of complications of penetrating wounds of the lung may be considered immediate complications and remote complications. Immediate complications are fairly well known, having been well described by the medical men at the front. The remote complications, seen mostly by the personnel of the base interior hospitals, have been less accurately described.

Of the immediate complications, the three most important are: (1) pneumothorax; (2) secondarily infected hæmothorax; (3) primary pyopneumothorax.

The less significant complications are accompanying abdominal wounds, abscess of the lung, abscess of the mediastinum, fracture and osteitis of the ribs.

Pneumothorax is extremely frequent, occurring in about 47 per cent of the cases seen by Piéry. The striking fact is how frequently partial pneumothorax occurs without playing any part whatsoever from the point of view of symptomatology. As a

rule, the pneumothorax is, of course, due to escape of air from the lung substance. Much more serious is the type of pneumothorax due to a gaping wound of the chest wall. This type of pneumothorax is almost always total, and almost always results in infecting the pleural cavity, setting up acute empyema.

The secondarily infected hæmothorax occurred in about thirteen per cent of Piéry's cases, and manifested itself by a recurrence of fever about the third or fourth week. The exploratory aspiration serves to differentiate this condition from the fresh pneumonia. It is unnecessary to add that this condition is much more serious than is pneumothorax.

The primary pyopneumothorax may be partial or total. The partial ones are very difficult to diagnosticate. X-ray, however, aids a great deal in reaching a conclusion concerning them and exploratory aspiration is invaluable. The total pyopneumothorax occurs usually with severe infections of the pleura and is always of grave prognostic import.

Piéry devotes only a few words to what he has already referred to as the "other less significant complications of penetrating wounds of the chest." Under the head of remote complications are considered: (1) late hæmoptysis; (2) abscess of the lung; (3) gangrene of the lung; (4) late pneumonia; (5) accidents which are followed by rapid, sudden, unexplained death, possibly related to the accidents which in civil surgery are grouped under the head of "accidents due to pleura reflex."

Under the head of pathology, Piéry emphasizes again the constancy with which simple wounds of the chest are accompanied by pneumonia, explains the mechanism of the development of pneumothorax, early and late hæmoptysis and the mechanism of infection by bacteria from lung substance, chest wall, projectiles and other foreign bodies.

Under the head of symptomatology, Piéry emphasizes the points already made regarding the characteristic temperature and other symptoms and physical signs, and the rôle in diagnosis of X-ray and exploratory puncture, emphasizing the importance of reaching a diagnosis at the earliest possible moment.

Prognosis of the simple penetrating wound is very much better as regards life than one would be led to imagine. In Piéry's experience, this type of wound has been attended with far better results than wounds of the femur, and on the whole, has been astonishing in its benignancy. His mortality has been 9.4 per cent, the mortality of Maissonet 20 per cent, and that of DePage and Jannsen 15.3 per cent. Piéry emphasizes that in speaking of this low mortality rate he is considering only the simple penetrating wounds of the chest and not those serious accidents accompanied by injury to the heart and large vessels. Another interesting fact is that pneumothorax, even the total pneumothorax, does not seem to influence the prognosis unfavorably. Indeed, pneumothorax may be looked upon as a beneficial symptom in that it compresses the lung and checks bleeding. The two gravest prognostic elements are the large open chest wound and generalized infection. It is well to call attention to the significance of the pulse in prognosis; Piéry states that a pulse which alters from about 100 beats to the minute to a rate of 120 to 130 with slight irregularity is a sign of the gravest possible significance.

Treatment of penetrating wounds of the chest is divided under the heads of immediate treatment, consecutive treatment, and treatment for complications.

Immediate treatment has to do in the first place with assuring rest during transport and during the stay at the regimental aid station and at the evacuation hospital. Transport over any appreciable distance is contra-indicated. After application of the first aid dressing, one limits his efforts to combating the tendency to collapse, the dyspnœa and pain by morphine. As a matter of fact, the chest should be immobilized on the injured side, but Piéry says that one should not worry if the immobilization is not very thorough, because there are few bad effects caused by transport over an ordinary distance.

As to the treatment of the thoracic wound itself, Piéry says that it cannot be insisted upon too strongly that one should not practice excision of the wound. Gasquet and LeNouene agree with this advice. Of course this is contrary to the usual method of handling wounds, but except in very rare cases, such as subcutaneous hæmatomata which harbor infection, abscess of the pleura requiring opening, or late pneumothorax, excision of the wound is dangerous.

The opening caused by a foreign body passing between the ribs frequently closes itself immediately. If this wound be excised, a portal of entry is created for infection of the pleural cavity. DeMartell makes this same statement in regard to penetrating wounds of the skull, in which the points of entry and exit are closed. The extraction of foreign bodies in the chest wall can also be left for a later date. In the treatment of these cases, one should bear in mind the great danger of pulmonary congestion and try to combat this with suitable drugs. Ipecac and digitalis seem to be the most appropriate ones.

The so-called consecutive treatment comprises merely the treatment from the time the emergency treatment has been looked after, the important feature of course being the question of operation, which will be discussed later.

Treatment of complications is limited to the treatment of hæmothorax, pyothorax, pneumothorax and intrapulmonary projectiles.

Regarding the indication for operation, it is unfortunately true that the early optimistic reports regarding the safety of lung surgery must in a measure be modified; in other words, one must

bear in mind that surgery of the lung, in spite of the remarkable recent advance, is still surgery of a very grave sort. For this reason, largely, Piéry states that one has no right to assume that every foreign body in the lung must of necessity be extracted. Rather, the needs of removal should be based on some complication referable directly to the foreign body. The most urgent indication is hæmorrhage. Pulmonary abscess is another indication. Finally, there is to be determined the important fact of whether a pneumonic process is dependent on the foreign body.

The best time to operate is in the so-called interval after the hæmopleuropneumonia has abated. Piéry says that the situation is very much the same as the one confronting the surgeon in cases of appendicitis; it is always desirable to operate in the interval if possible, but the surgeon should never hesitate to allow his hand to be forced by threatening symptoms. As a general rule, extraction of foreign bodies should be considered as an operation to be performed in interior hospitals rather than in the hospitals at the front.

Piéry describes the technique of Marion, of de Mauclaire, of Villion and of Duval. Of these, he selects that of Duval as the most suitable and characterizes it as "harpooning" the portion of the lung. In brief, the technique of Duval consists in resection of one rib, extensive retraction of the wound, evisceration of the lung, location of the projectile, removal of the projectile through an incision made into the lung if it is easily located, and suture of the lung wound.

Piéry closes his article with a discussion of the indirect injuries of the lung due to concussion. Unfortunately, however, aside from merely stating that these injuries do occur and that they are characterized chiefly by hæmorrhage, he admits that so far there has been no theory satisfactorily explaining these indirect injuries.

PHARYNX AND ŒSOPHAGUS

Perkins, C. W.: Diverticulum of the Œsophagus and Pseudo-Diverticulum of the Descending Colon. *Hosp. Bull. Dept. Public Charities*, N. Y., 1917, i, 98.

Gastro-intestinal roentgenology has brought to light pathological conditions of the alimentary tract formerly considered rare but now observed to be of comparatively frequent occurrence. Diverticula of the œsophagus, non-ulcerative diverticula or hernia of the stomach and diverticulitis of the sigmoid are among such conditions.

The author has seen a diverticulum of the stomach, holding at least a pint, diagnosed by roentgen ray and operated upon by Walther at the Hospital La Pitie, Paris, in 1914.

A case is reported of a patient aged forty-five, with cough and bronchitis, good appetite, but having gastric distress. There was a specific history with treatment. The Wassermann test was now negative. In 1908, following an attack of pneumonia, she first noticed regurgitation of medicine and food which would occur sometimes ten hours after ingestion. She was treated for nervous dyspepsia and cardiac spasm.

Fluoroscopic and radioscopic examination in the vertical position showed a retention of four or five ounces of barium mixture. Only on changing to a recumbent position did it overflow and proceed down the œsophagus into the stomach. The diverticulum was at the level of the sternoclavicular articulation. The patient refused to undergo a complete examination. The treatment is not recorded.

C. A Hedblom.

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Chalier, A., and Glenard, R.: Penetrating Abdominal Wounds (Plaies pénétrantes de l'abdomen). *Rev. de chir.*, Par., 1917, liii, 124.

Of 1,500 important wounds observed in the authors' surgical ambulance, 39 were assured cases of abdominal perforating wounds, viz. 2.6 per cent. These 39 cases were distributed as follows: simple penetrating wounds, 4; univisceral penetrating wounds, 29; multivisceral penetrating wounds, 6.

The first part of the authors' study comprises the pathology, symptoms, diagnosis, complications and progress. The authors discuss all the symptoms, but point out that there is no pathognomonic symptom of a penetrating abdominal wound. It is only the presence of several signs which transforms probability into certainty, and if the surgeon awaits certainty he runs the risk of operating too late.

The authors had 19 deaths in the 39 cases treated. Of 11 medically treated there were 4 deaths. In these 4 cases an early operation was impossible owing to the patient's condition. Besides these 4 there were 7 abdominal wounds with certain penetration which were evacuated without surgical intervention. The cases treated surgically gave 15 deaths. The greatest mortality was in those treated by the Murphy operation. There were 14 such operations with 10 deaths, a mortality of 71 per cent. The authors give the statistics of several authors for this operation which show a mortality of 76.84 per cent.

For the purpose of comparison of intervention and abstention in abdominal wounds the authors give statistical tables of the results obtained by several reporters. The statistics of 29 abstentions show a mortality of 77.3 per cent. The statistics of 39 interventions give a mortality of 59.5 per cent.

The difference is clearly in favor of immediate intervention.

It is however important in treating abdominal wounds that operation to be effective be early. If operated upon within the first six hours after injury, the chances of recovery are more than doubled. In the first six hours there is peritoneal asepsis. In the first three hours the prognosis is even better.

A late operation is almost certain to be a failure. Abstention is only indicated in cases where the patient comes very late and shows no symptoms which give a manifest reason for intervening surgically. The author condemns the blind drainage of the Murphy method.

The operation in the case of abdominal wounds should be a wide laparotomy which allows careful exploration and as complete repair of all lesions as possible. It should be done by a skillful experienced surgeon who has all the necessary equipment at his disposal. The treatment of abdominal penetrating lesions may be summed up as follows: Early systematic operation is preferable to abstention if conditions are satisfactory. Success will depend especially on good transportation and rapid evacuation from the front line formations.

W. A. BRENNAN.

Stoppato, U.: The Pre- and Postoperative Treatment of Abdominal Wounds (Il trattamento pre- e post-operatorio dei feriti dell' addome). *Policlin.*, Roma, 1917, xxiv, *sez. chir.*, 473.

The author says that the treatment of abdominal wounds is not alone a surgical problem, but essentially a medico-surgical problem. Such cases usually reach the surgeon in more or less marked shock. They should receive at once a subcutaneous injection of 1 or 2 cg. of morphine, and then means should be applied to increase the blood-pressure and the patient's vitality.

For this the author uses camphorated oil, adrenalin, and salt solution. The camphorated oil is administered subcutaneously after the morphine in doses varying from 3 to 4 ccm., injecting at the most 2 ccm. at the same point. Such injections are usually made in the first quarter of an hour after arrival. Adrenalin is also administered subcutaneously in doses of 1 or 2 ccm. of a 1:1,000 solution. The serum may be administered hypodermically or intravenously.

Means to combat hypothermia should be used. If the shock is slight, it is not necessary to await the effects of the injections. If the shock is severe but susceptible to treatment, the effects will be observed within thirty to forty minutes and this amount of delay before operation will usually suffice. If the shock is very severe, the patient should be permitted to rest for not exceeding two hours, the stimulant being repeated at sufficient intervals as deemed necessary. If after two hours there are no signs of recuperation, it is better to abandon the idea of operation.

It will be necessary during the operation to combat the additional operative shock by continuing the injections at intervals.

In the postoperative treatment the position of the patient is important. The Fowler position is not indicated in all cases; certain cases may require a lateral decubitus or even a horizontal position with the head pendent, especially when there has been abundant hæmorrhage and threatening anæmia.

The circulation will need careful watching; the author continues the camphorated oil and adrenalin injections alternately; but the use of morphine is restricted as the author is not convinced that it is harmless.

Food and all drink is forbidden for the first twelve hours. Then only a spoonful of milk and water, brandy, or wine with water is given every hour.

To overcome abdominal meteorism enemas of equal parts of warm water and glycerine are used. This should be personally administered by the physician in the manner described by the author. After expulsion of gas, the intestine is cleansed with warm salt water. Other points regarding diet, etc., are detailed.

In true abdominal wounds which have been operated upon, the author has never observed recovery by first intent. He thinks that this is explained by the fact that septic matter is carried by the projectile into the intricacies of the intestinal wound which contaminates the walls during operation.

W. A. BRENNAN.

Bloodgood, J. C.: Some Hernias That Disqualify for Military Service, Whether Operated upon or Not. *J. Am. M. Ass.*, 1918, lxx, 515.

There is a small group of hernias for which at the present time operations have failed to result in cure in from 20 to 50 per cent of cases. Among 243 cases of inguinal hernia, this type occurred in 11 instances, about 4.5 per cent. Among these 11 cases there were 6 recurrences, more than 50 per cent, in from six weeks to six months after operation.

This type of hernia can be recognized when the patient is examined lying flat on his back. If the finger is pressed against the scrotum and pushed up into the external ring, as the index finger passes through the external ring, the hernia having been reduced, in the larger number of cases it meets an obstruction (the conjoined tendon) and is deflected upward and outward, following the course of the inguinal canal. In this smaller group the index finger meets no obstruction, but enters at once into the peritoneal cavity, and in some cases the opening is so large that when the index finger is flexed it can palpate the pubic bone in the region of the symphysis.

In those cases in which this examination detects the complete absence of the conjoined tendon, the ordinary operation for inguinal hernia, according to Bloodgood's investigations up to 1899, failed to cure in about 50 per cent of the cases. Later observations of these cases have shown that the per-

centage of recurrences has been reduced to about 15 or 20. It is the author's opinion that it is possible to select this group at the complete examination at the cantonment, and these applicants or registrants should be rejected, saving the government the expense incidental to the operation and later discharge for recurrent hernia. P. G. SKILLERN, JR.

GASTRO-INTESTINAL TRACT

Hernaman-Johnson, F.: The Value of Information Furnished by the Opaque Meal in Disorders of the Alimentary Tract. *Med. Press*, 1918, cv, 101.

This article is largely a refutation of certain statements made by Lewis in an article on "The Principles of Treatment in Indigestion" which appeared in the *Medical Press* on January 16, 1917. The fallacy of supposing that the inhibitory effect of the bismuth meal on peristalsis vitiates the findings in regard to the motility of the gastro-intestinal tract as disclosed by the roentgen ray is especially emphasized. The author points out that for the same type of meal, administered under standard conditions, there is a normal rate of progress through the alimentary tract. Any marked deviation from that rate may serve as a basis for the determination of functional or organic disturbance. In addition, alterations of position or deformities of outline in the hollow viscera may be disclosed with the aid of the opaque meal and the roentgen examination, which are of greater importance than motility. ADOLPH HARTUNG.

Willan, R. J.: A Note upon a Helpful Diagnostic Sign in Ruptured Digestive Ulcers. *Brit. M. J.*, 1918, i, 142.

Several years ago the author saw a patient who had had many sudden attacks of acute abdominal pain which passed off just as suddenly. At the time of admission the patient was suffering from acute general abdominal pain of several hours' duration; this, with the board-like rigidity of the abdominal wall, indicated rupture of an intra-abdominal viscus. At operation a ruptured duodenal ulcer was found.

The feature of the case that impressed the author was the presence of a transverse ring of constriction across the abdomen at the level of the lower margins of the ribs and extending into the flanks on either side.

The constriction is usually present and does not always disappear with general anæsthesia, although it does disappear when the condition has advanced to the stage of general abdominal distension. There is no marked hyperæsthesia, and the patient is quite unconscious of any feeling of tightness at the site of the constriction. It is not confined to spare or emaciated persons, and is a different thing from the scaphoid abdomen seen in emaciation. The appearance is as if an invisible rope was constricting the abdomen. It may be that it is an attempt of nature to limit the effects of the perforation to the upper portion of the general peritoneal cavity. The sign was present in the author's last two cases of ruptured ulcer. The ring of constriction corresponds to that portion of the abdominal wall supplied by the ninth intercostal nerve, and is certainly due to muscular contraction.

The muscles involved are the two recti abdomini, external oblique, internal oblique, and transversalis. V. C. HUNT.

Daignault, O.: Gastroptosis and Ptosis of the Transverse Colon. *J.-Lancet*, 1918, xxxviii, 75.

Gastroptosis, or ptosis of the stomach and ptosis of the transverse colon, is a disease to which the general practitioner gives very little attention. The literature on the subject is very meager, but most authors take it for granted that when one organ shows ptosis, there is a general ptosis of all the abdominal organs. Daignault claims that one may have a ptosis of the transverse colon and stomach together without a general ptosis of the liver, spleen, and kidneys.

The author gives a description of the anatomy of the supports of the stomach and states that Glenard, who was the first to give a good description of this affection, thought that the transverse colon was the starting point. He maintained that the transverse colon is fastened to the pyloric end of the stomach by a band or ligament, that the accumulation of fæces in the transverse colon causes it to sag somewhat, and this sagging of the transverse colon exercises traction on the pylorus, thus causing the descent of the stomach.

The symptoms of the disease vary more or less. Ptosis may be present without many symptoms, although most of the patients complain of pain in the epigastrium after eating, a dragging sensation in the abdomen and some backache. Most of them are nervous, neurasthenic, and discontented, complaining a good deal of weakness, a tired feeling, and constipation. These symptoms are very likely due to absorption from accumulation in the transverse colon. Hypoacidity usually exists. There is not much regurgitation of food or gases after meals.

He states that the diagnosis is usually difficult, as the cases do not always present gastric symptoms, but instead the patients complain of a good many troubles throughout the body. He suggests the X-ray as the best means of diagnosing these cases. The radiograph should be taken with the patient standing to show the position of the stomach and colon.

In the treatment of these cases most surgeons and medical men admit that suspension of either the stomach or colon shows good results only in a few select cases. The author states that these cases are best treated in a hospital. They should be put to bed with the foot of the bed elevated, so that the organs have a chance to get into their normal position. They should never be allowed to sit up while under treatment, except to be raised

a little at meal time. Overfeeding should be the main treatment. These patients after a few days take easily six feedings a day, three good meals and three lunches. They should also be given daily massage to help the metabolism. They should be given this treatment for a period of from six to eight weeks, or until the weight has increased from 20 to 25 pounds. No medicine except a general tonic is given. After they get up, they should be fitted with a corset or band to help the abdominal muscles.

Daignault thinks that if these cases are better studied, a class of cases heretofore classified as neurasthenics will be greatly benefited.

G. W. HOCHREIN.

Boas, I.: Occult Hæmorrhages. *Muenchen. med. Wchnschr.*, 1917, lxiv, No. 23.

Boas investigates the significance of occult hæmorrhages in carcinoma of the digestive tract. No matter what the treatment of such carcinoma, it presupposes an early and exact diagnosis.

Although the roentgenologic method is preferred by many, the number of those who urge the great value of occult hæmorrhage in the diagnosis of stomach carcinoma is continually increasing.

The present report of Boas is based on a very large amount of material not only concerning carcinoma of the stomach but also concerning carcinoma of the rest of the digestive tract. This clinical material dates from 1910 to 1917. There are 109 cases, 90 of the stomach, 12 of the œsophagus and 7 of the colon. In all the cases, the diagnosis was verified by biopsy or autopsy. In the 90 stomach carcinomata, occult blood was found in the fæces in 95 per cent and in the gastric contents in 62 per cent. In 56 cases of stomach carcinoma which related to the period of the war and which were directly examined by Boas, occult blood was without exception present in the fæces and in 78 per cent of the gastric contents.

In the 12 cases of œsophageal carcinoma, there was occult blood constantly in the fæces. In the 7 colon cases, blood in one case could be observed macroscopically and occult blood was constant.

With regard to the question whether carcinoma of the gastro-intestinal tube can be excluded if there is a constant absence of occult hæmorrhage, Boas, on the basis of his own clinical experience and numerous biopsies, thinks that when the search for occult blood is constantly negative both in the fæces and in the gastric contents, it speaks with great probability against a carcinoma of the gastro-intestinal tract.

Boas discusses the distinction between occult blood proceeding from ulcers and that proceeding from neoplasms. Diagnostic errors between ulcers and carcinoma of the stomach were frequently made by Boas in early years, but in the past three years, with the greater security of judgment of occult hæmorrhage joined to sufficient bedside observation, such errors are infrequent.

Boas thinks that the search for occult hæmorrhage as a method of diagnosing carcinoma of the stomach and œsophagus which will be of the very greatest advantage to all practitioners. When the method comes into general use, patients with such carcinomata will reach the hands of the surgeon earlier and hence there will be a much better prognosis than at present.

W. A. BRENNAN.

Keilty, R. A.: Intestinal Toxæmia of High Obstruction. *J. Am. M. Ass.*, 1918, lxx, 512.

The author reports in full the history of a case of obstruction high in the jejunum occurring in a soldier, aged twenty-three. The obstruction was caused by a intussusception having its origin in a papilloma which was discovered at autopsy. The course of the disease was eleven days from date of admission to death.

The physical signs were indefinite; nausea, hiccoughs and vomiting of large quantities of bile-stained material were the prominent abdominal symptoms. There was marked headache with an ever increasing profound toxæmia without delirium and without meningeal symptoms. The temperature ranged between 97 and 98 degrees. During the course of the disease the bowels moved freely three times and the day before death they moved copiously after the administration of magnesium su'phate.

The patient remained rational, felt cold and chilly until a few hours before death when he became unconscious without delirium. Respirations were very shallow but not rapid; the pulse was regular and of fair volume, the extremities blue, cold, and dry. There was no evidence of shock or collapse and there were none of the symptoms of active uræmic toxæmia. An intense asphyxia upon which the usual stimulants had no effect was the main phase. The blood was negative for malaria, negative on culture; leucocyte count was 6,000.

The necropsy disclosed the intussusception due to an adenoma of the jejunum. The cause of death was given as duodenal toxæmia due to high obstruction, acute hæmorrhagic jejunitis and terminal hypostatic pneumonia.

The author believes that the absence of delirium, of meningeal irritation and of collapse rules out hepatic or uræmic toxæmia in this case. The high degree of asphyxia puts the etiologic toxin in the class of potent chemicals.

ELLIS FISCHEL.

Mackenzie, H. W. G., and Battle, W. H.: Some Remarks on Intussusception. *Lancet*, Lond., 1918, cxciv, 215.

Mackenzie says that the frequent performance of abdominal operations during the past f w years has brought a considerable increase in knowledge of the more rare conditions which threaten life, especially the acute diseases which are often curable if the patient will permit early operation. Intussusception is a striking example of this.

He states that the old classification of the varieties of intussusception by Leichtenstern must be ex-

panded. He wrote of: (1) invagination of the death-struggle, an unimportant cadaveric incident; (2) inflammatory invagination, taking place without exception from above downward.

Mackenzie suggests the following classification:

1. Acute, which may be divided into (a) simple, which may be single or multiple; (b) compound, where the primary invagination was enveloped in a second passing in the reverse direction; (c) complicated, in which intussusception has been caused by a new-growth.

2. Chronic. Usually enterocæcal or enterocolic.

He quotes cases illustrating each variety. He mentions one case to show that the diagnosis of chronic intussusception is sometimes difficult. The patient complained of noises in his abdomen, especially after meals, for two or three weeks, but had no pain, constipation, nausea, or vomiting. Five weeks after the onset, about one hour and a half after lunch, a swelling was seen to form in the upper and inner part of the right iliac fossa. There was much visible peristalsis with borborygmus. X-ray plates were made which showed no evidence of organic obstruction. He was operated upon seventeen days later. A greatly distended and hypertrophied ileum was found. The ileocæcal angle including the cæcum and about seven inches of the ileum were resected and the appendix, which contained a concretion at the tip, was removed. The patient made an uninterrupted recovery.

The most interesting point of this case is that although the lumen was contracted, practically the only symptom exhibited was the noise produced by the gurgling of the liquid and gaseous contents of the dilated small intestine through the narrow channel of the intussusception. G. W. HOCHREIN.

Christopher, F.: Myoma of the Intestines. *N. Y. M. J.*, 1918, cvii, 120.

The infrequent occurrence of myomata of the intestine and the important rôle which such tumors occasionally may assume seem to the author to warrant the reporting of this case.

The patient was a female, married, 28 years old. Physical examination was negative save for fixed pupils, impairment of the left apex, relaxed perineum and retroversion of a small uterus; the Wassermann reaction was positive. Urinalysis was negative.

An operation was performed for chronic appendicitis and for retroversion of the uterus. During the course of the operation a nodule 3 cm. in diameter was noticed attached by a pedicle 2.5 cm. long by 0.8 cm. in diameter to the anterior aspect of the sigmoid flexure. The nodule was a yellowish white and seemed to have a thick wall. The pathological report was degenerated myoma of the intestine. The capsule was thin but dense.

The section of the tumor showed it to be a myoma. The origin of these tumors is uncertain. Steiner, who analyzed 51 cases of myomata of the intestine, claims 41 per cent were attached to the stomach, and in 59 per cent they were equally divided between the large and the small intestine. The age varied from seventeen to eighty years, and the size from one to forty centimeters; some weighed as much as seven kilograms. Not infrequently they are the cause of obstruction or intussusception.

E. C. ROBITSHEK.

Miller, H. T.: An Unusual Case of Malposition of the Appendix. *J. Am. M. Ass.*, 1918, lxx, 23.

The author records the case of a four year old boy who appeared to be suffering from a typical attack of appendicitis. The child was removed to the hospital for immediate operation. Under anæsthesia a mass at McBurney's point was readily discernible; when the abdomen was opened, it proved to be the cæcum. Diligent search for the appendix failed to reveal any trace of this organ; furthermore, the cæcum and ileum were smooth and free from any adhesions which might have buried an appendix.

Within the cæcum, however, a movable mass was palpable. This mass was apparently attached to the cæcum at a point corresponding to the usual location of the base of the appendix. Further abdominal exploration was negative. The wound was closed.

The patient was very ill until the fourth day when there appeared in the stool a thick, purulent and very offensive discharge. After this the patient made an uneventful recovery, except that on the tenth day a yellowish green slough was passed which the author took for the misplaced appendix. R. B. BETTMAN.

Jacobson, I. H.: Left-Sided Appendicitis in Situs Inversus Viscerum Totalis. *Am. J. Obst.*, N. Y., 1917, lxxvi, 953.

The author relates the particulars of a case of genuine left-sided appendicitis associated with total transposition of the abdominal viscera, in a young man of twenty-four years. The patient had three days of acute abdominal pain with a history of similar previous attacks. During the physical examination it transpired that the patient had been told a number of years previous that his heart was on the right instead of the left side. The nature of the conditions had been more or less obscure, but this information enabled a diagnosis of left-sided appendicitis to be made after further examination had verified the truth of the statement.

Incision was made through the left rectus muscle. The appendix was found perforated and gangrenous, hanging over into the pelvic cavity and attached to the left side of the pelvic wall. It was removed and a drain placed. Recovery was uneventful, but three weeks later the patient developed severe abdominal pain again. The abdomen was opened and a dense obstruction found in the small intestine as a result of adhesions in the pelvic cavity. A lateral anastomosis was done, but the patient died the following day.

The author has found eleven cases besides his own in an exhaustive search of the literature. In only three cases was a previous diagnosis made and the appendix removed through an opening deliberately made on the left side. W. A. BRENNAN.

Pury, G. A. C. de: Intestinal Plicature in Affections of the Ascending Colon (Rôle de la plicature intestinale dans les lésions chroniques du colon ascendante). *Paris méd.*, 1917, vii, 337.

Pury gives the details of four cases to show that the appendix is often held responsible for colon troubles which are due to other factors, and often the appendix is removed, leaving those troubles untreated. Very often the site of trouble is the angle of the colon just below the liver. There may be more or less constriction here with abundant adhesions. A train of lesions may have this as their origin and such lesions may involve the gall-bladder, the pancreas, and even the kidneys. The stagnation of fæces with secondary infection is always the primary trouble, starting inflammation of the intestinal wall and entailing atony of the cæcum and abnormal distention. The correct diagnosis as a rule can only be obtained after careful roentgenoscopy.

In operating, it is immaterial what technique is followed, provided: (1) that it reduces the abnormally distended cæcum; (2) that it frees the intestine from adhesions; (3) that it re-establishes the right colic angle and clears the fæcal circulation obstructed by pathologic conditions.

W. A. BRENNAN.

LIVER, PANCREAS, AND SPLEEN

Behrend, M.: Some Observations on Gall-Bladder Disease and Its Surgical Treatment. *Med. Rec.*, 1918, xciii, 147.

Jaundice is not a common symptom of gall-bladder disease, but "a constant muddy or brownish complexion, without any other symptoms, is indicative of gall-bladder disease." Pain also is a variable symptom and may manifest itself either as a dull uncomfortable sensation in the epigastrium and referred to the back, or often as a constant burning pain in the epigastrium and referred to the region of the gall-bladder. Often no pain has been experienced, and yet gall-stones exist.

The differentiation from duodenal ulcer is often easy on account of the hunger pain, its occurrence two hours after eating and its relief by the ingestion of food. Greater difficulty arises in differentiating gall-bladder disease from a high appendix. The error surgically is not great, however, since the appendix can be removed through the same incision.

Gall-stone colic will often stimulate labor pain in the later months of pregnancy.

The author is of the belief that toxæmia, infection, stasis or a high cholesterol content has a bearing on the formation of gall-stones.

"One never finds a diseased gall-bladder without a diseased appendix," says the author, and goes on to say that infections of the gall-bladder may be secondary to infections of the appendix. It occurs perhaps by lymphatic extension or by continuity or contiguity on account of close relationship. Other avenues of infection may be either the common duct or the blood. The author doubts the possibility of direct infection through the common duct, "on account of the sterile condition of the contents of the duodenum."

The cholesterol test has been found of considerable use in differential diagnosis. The author states, "in 100 cases of suspected gall-bladder disease operated upon, there was a high cholesterol index in 98 cases, all of which revealed gall-stones."

The X-ray is of little help in the diagnosis. Gall-bladder disease is a surgical condition and prolonged medical treatment leads to complicating changes in the pancreas, carcinoma of the gall-bladder, and secondary inflammation of the pancreatic lymph-nodes. Diabetes may even be secondary to neglected cases of gall-bladder disease on account of changes in the pancreas, the author asserts.

Behrend advocates removal of the gall-bladder, because "a gall-bladder once diseased is always diseased." He believes the better method is stripping the gall-bladder from below up. This method limits bleeding, since the cystic artery is clamped. He concludes with the statement that recurrence after cholecystectomy is less than 2 per cent, while cholecystostomy shows about 15 per cent recurrence.

M. A. BERNSTEIN.

Nuzum, F.: The Diagnosis of Infarction of the Entire Spleen. *J. Am. M. Ass.*, 1918, lxx, 282.

Nuzum states that the symptoms of infarction of the entire spleen are pain, tenderness in the left hypochondrium, enlargement of the spleen, occasionally fever, and vomiting of blood due to rupture of dilated gastric veins. Whenever the spleen becomes totally infarcted, enlargement occurs, the weight varying from 300 to 1,300 gms., and the dimensions reaching such proportions as 25 by 15 by 8 cm.

The presence of fever apparently depends on the disease to which the spleen alterations are concomitant. In one of the four cases reported by Nuzum the proteus mirabilis, and in another the colon bacillus was isolated from the spleen and in each case a rise in temperature of from one to two degrees was present intermittently.

Vomiting of blood, bright red at times and at other times resembling coffee grounds, is of frequent occurrence.

In the etiology of total infarction of the spleen vascular obliteration has been held responsible, but the cause of the vascular obliteration must be determined. The important factors here concerned are pressure on the walls of the splenic vessels by tumors; torsion of these vessels in instances of

ectopic spleen; thrombosis of the splenic vessels, and embolism.

The pathology of total infarction of the spleen does not differ from infarction in any viscus that has a "terminal" blood supply. In each of the four cases reported the spleen was entirely necrotic, resembling a bag filled with purulent material. In two of the four instances bacteria of a low virulence was isolated from this material.

In discussing splenic thrombosis one must consider the possibility of a relationship between this condition and the so-called Banti's disease. Authorities differ on Banti's disease. Senator maintains that splenic anæmia cannot be differentiated from Banti's disease during the first stage of the latter, and Gilbert and Lereboullet, after a thorough review of the subject, decide that Banti's disease does not exist.

Nuzum summarizes his paper as follows:

1. Total infarction or necrosis of the spleen has been infrequently reported.

2. Total infarction of the spleen may result from an embolus or a thrombus in either the splenic artery or the splenic vein; from the extension of a thrombus backward from the portal vein into the splenic vein; from pressure on the splenic vessels by a neoplasm; from torsion of the splenic vessels when the spleen is displaced, or from an inflammatory process originating within the spleen and involving the terminal branches of the splenic artery and vein (Bonne's view).

3. Total infarction of the spleen gives rise to definite enlargement of the spleen, pain and tenderness in the left hypochondrium, fever, and occasional vomiting of blood, and from these a correct diagnosis may be made.

4. The treatment, whether medical or surgical, depends on many factors, such as the condition of the patient and the underlying disease of which the splenic infarction may be either the chief expression or only a minor part. G. W. Hochrein.

Longcope, W. T.: Acute Tuberculosis; Polycythæmia with Enlarged Spleen: Vaquez's Disease. *Med. Clin. N. Am.*, 1917, i, 465.

The case which was presented by Longcope was that of a man fifty-five years of age whose chief symptoms were that of hemiplegia. On careful examination it was found that everywhere the skin was dark in color, assuming a purplish-blue; this was particularly marked about the face, neck, ears, hands and feet. There was associated with the above symptoms a dilatation of the deep and superficial veins. There was also evidence of circulatory disturbance as evidenced by clubbing of the fingers and toes and enlargement of the heart. The spleen also was found markedly enlarged.

The blood examination was as follows: hæmoglobin, 130 per cent; red cells, 8,000,000; leucocytes, 12,000; with 82 per cent polymorphonuclears.

It has been supposed that the condition had its origin primarily in the spleen, but whether the enlargement is primary or secondary or represents an accompanying condition cannot at the present time be determined. It seems probable from the work of Sampson that erythrocytes stored especially in the liver are suddenly expelled into the circulation.

There is no evidence that the polycythæmia is in any way dependent upon lack of oxygen and the carrying capacity of the red cells. Butterfield has found the oxygen-carrying capacity of the blood normal in Vaquez's disease.

The morbid anatomy of the fatal cases has shown quite regularly a marked hyperplasia of the bone-marrow and an enlarged spleen, which in a few cases has been the seat of tuberculosis.

The therapeutic measures which have been tried in these cases have proved more or less unsatisfactory. X-ray, extirpation of the spleen, and bleeding are the measures employed for its relief. Bleeding seems to have been of some benefit.

M. A. Bernstein.

Fiolle, J.: War Wounds of the Spleen (Les plaies de guerre de la rate). *Rev. de chir.*, Par., 1917, liii, 679.

Fiolle says that in the early stages of the war surgical treatment of wounds of the spleen was discouraging and led to the erroneous idea that little was to be gained from surgical intervention. Fiolle's present extensive summary of war surgery of the spleen is based on cases both personal and collected from the literature.

The size of the projectile injuring the spleen is of capital importance. The organ is friable and gorged with blood; small projectiles may tunnel through it without causing any very serious damage; but if the projectile is large, the organ ruptures. In addition to direct wounds there are cases of rupture caused by projectiles which do not directly injure the spleen. Such may be due to violent muscular contraction or other disorganization produced by a large projectile striking in the vicinity of the spleen.

Splenic injuries may therefore be divided into: (a) superficial furrows; (b) punctiform wounds; (c) tunnel wounds without rupture; (d) rupture wounds which may divide the spleen into two or more parts; (e) tears of the pedicle.

Splenic tissue has a marked tendency to infection which is frequently fatal.

The pleura is the organ most frequently concomitantly injured with the spleen. In isolated splenic wounds there is no immediate symptom. The most usual symptoms are those of peritonitis, and the symptoms which correspond to an internal hæmorrhage are frequently absent. It is difficult to explain why such large effusions of blood do not give clinical signs, but such is the fact.

In splenic wounds complicated with thoracic or abdominal wounds it is even more difficult to find any symptoms referring to the spleen alone.

Although some rare cases attest that splenic wounds may cure spontaneously, yet if left untreated they nearly always prove fatal either from late hæmorrhage or infection.

The peritonitis due to isolated splenic wounds is mostly localized. Generalized peritonitis is rare, but subphrenic abscesses are frequent. The progress of such abscesses is particularly rapid and malignant. They may open into the thorax and give rise to purulent pleurisies.

In diagnosis the author relies mostly on radioscopic examination which gives the most definite indications and may show a projectile in the spleen. Surgical exploration is the only certain method of establishing a diagnosis.

War wounds of the spleen have long been considered fatal. In a total of 61 splenic war wounds gathered by Fiolle from 1915 to 1917 there have been 16 recoveries and 45 deaths, a mortality of 73.7 per cent. But the most recent statistics show an improvement. DePage reported 3 recoveries in 4 isolated spleen wounds operated upon. More recently still Duval and others reported 62.5 per cent of recoveries in 8 associated splenic wounds.

The great improvement in the prognosis of splenic wounds, both isolated and associated, since the beginning of the war has resulted particularly from better surgical conditions.

As a principle every splenic wound calls for immediate surgical intervention. The only definite contra-indication is extreme gravity of the general state, but only when such is due to gross lesions of the neighboring viscera. The splenic lesion then ranks second, and no intervention can save the patient. There may be cases where a splenic wound may continue for days without showing symptoms, but there will be sooner or later a fatal issue from infection or hæmorrhage, and hence in all such cases when a splenic lesion is suspected or known Fiolle thinks intervention should be made.

The various routes of approach are discussed; the incision will depend on the circumstances. Fiolle prefers the posterior or dorsolumbar incision owing to the facility it gives for splenectomy. He describes his technique. When the spleen on exploration is found injured, splenectomy is the best treatment. It obviates septic complications and late hæmorrhages. In the author's surgical automobile service 7 splenectomies have given 5 recoveries.

The author gives short histories of 44 cases of his own and some gathered from the literature.

W. A. BRENNAN.

SURGERY OF THE EXTREMITIES

DISEASES OF THE BONES, JOINTS, MUSCLES, TENDONS, CONDITIONS COMMONLY FOUND IN THE EXTREMITIES

Lewis, D.: Myositis Ossificans Developing in a Clean Incised Abdominal Wound. *Surg. Clin. Chicago*, 1917, i, 1119.

Lewis presents a case in which a gastro-enterostomy was performed for duodenal ulcer. Three weeks after the operation a hard mass corresponding to the abdominal incision developed. This mass presented a bony hardness and was tender to pressure. The mass was not intra-abdominal, and showed a large shadow with the X-ray. It was concluded that the mass was a myositis ossificans of the abdominal wall.

Numerous cases have been reported in which circumscribed myositis developed in different muscles of the body. The condition usually follows one severe injury caused by blunt force in which there results considerable laceration of muscle fiber associated with hæmatoma. The peculiarity of this case was that it occurred in a cleanly incised wound.

No attempt was made to remove this bony mass. Lewis was of the opinion that it would be absorbed. In some instances the ossifying process develops rapidly, followed by a gradual absorption.

Etiologically circumscribed ossifying myositis may be divided into the traumatic and non-traumatic, and into those associated with defects of or diseases of the central nerve system, such as spina bifida, tabes, syringomyelia, transverse myelitis and paretic dementia.

M. A. BERNSTEIN.

Roberts, P. W.: Syphilitic Joint Disease Simulating Tuberculosis. *J. Am. M. Ass.*, 1918, lxx, 372.

Roberts discusses the similarity of syphilitic joint disease to tuberculosis and points out the difficulties of differentiating between the two lesions. Until recently the diagnosis of tuberculous joint disease was considered one of the simplest and most definite problems with which the orthopedic surgeon has to deal, but the more recent studies of congenital syphilis proves that this simplicity is only apparent.

In the present state of its development the Wassermann reaction is not always to be relied upon as a means of diagnosis. It frequently happens that this reaction is negative even in the presence of a direct family history of syphilis. Roberts points out that it is necessary to inquire carefully into the early life of the patient from the time of birth onward, noting the physical and mental development of the child during infancy, searching for a history of skin disease and making sure that the eruption that is called measles is not a syphilitic rash. One should examine for unduly tender tibiæ, sternoclavicular joints and sterni and inquire for supposed attacks of "rheumatism," growing pains and articular disease of any sort.

One should also examine the teeth carefully. It is now recognized that inherited syphilis may be responsible for many anomalies of the teeth and that notched upper central incisors are but one of many of its curious manifestations. Perhaps the most frequent anomalies suggestive of inherited syphilis are widely spaced incisors, and irregularities

on the lingual surface of the upper molars. Roberts reports ten cases in which the dental findings were the only clues to the etiology of the joint lesions. These cases were put on antisyphilitic treatment and the lesion disappeared.

He states the results of the treatment vary according to the type of tissue invaded, the virulence of the organism and the resistance of the patient. Where there is no bone involvement, joint symptoms of long standing usually disappear in a few weeks and sometimes with astonishing rapidity. Bone lesions, however, clear up slowly, even when accompanying acute symptoms cease early; and when regeneration does take place, approximately a year of continuous treatment is necessary. G. W. HOCHREIN.

Holland, C. T.: Two Cases of Rare Deformity of Feet and Hands. *Arch. Radiol. & Electrotherap.*, 1918, xxii, 234.

The author states that he has been on the lookout for many years for abnormalities of development of the hand and foot, with special reference to the carpus and tarsus, but has practically met with none. Then, within one month, he met with two of the rarest abnormalities of these regions. In searching the literature as well as possible at the present time, he finds little on the subject. Dwight reports only two cases of the fusion of semilunar and cuneiform bones in the carpus of a negress and of a white male, and also the fusion of the external cuneiform and third metatarsal bone.

In the author's first case, a male, thirty-three years old, he states that with the exception of one-half inch shortening, the foot appeared normal in all respects. Points noted were:

1. The cuboid was completely fused with the base of the fourth metatarsal. There was no line of demarcation, and the shape of the joint formed by the base of the fifth metatarsal was more oblique than is normal.

2. The external cuneiform was completely fused to the base of the third metatarsal.

3. There was only an indication of a joint between the middle cuneiform and the base of the second metatarsal.

4. The scaphoid was completely fused with the internal cuneiform.

5. The joint between the internal cuneiform and the base of the first metatarsal was poorly formed.

A radiograph of the other foot showed nothing abnormal.

The second case was a woman twenty-one years old. Points noted were:

1. The os calcis and cuboid were completely fused without any indication of the junction.

2. The external cuneiform was fused partially with the base of the third metatarsal, but a line of demarcation was shown.

3. The middle cuneiform was completely fused with the base of the second metatarsal.

4. The astragulus was completely fused with the scaphoid, but showed in the upper part an indication of demarcation.

In this case the apparently normal hands showed:

1. Fusion of the unciform and cuneiform bones.

2. Fusion of the os magnum and trapezoid bones, complete on the left side, incomplete on the right side.

3. The semilunar was between the os magnum and unciform and articulated equally with each.

4. The scaphoid was abnormally shaped in each hand.

5. Each little finger showed a short middle phalanx. C. B. HOLLINGS.

Gottlieb, I.: The Rôle of Minor Surgical Procedures in the Development of Thrombo-Angiitis Obliterans. *N. Y. M. J.*, 1918, cvii, 65.

The object of this paper is to call attention to the dangers in the injudicious use of the knife for treating such minor complaints of the foot as an ingrown toe-nail, hammer-toe, bunions, corns, callosities, varicosities, swellings and abscesses of the foot or toes.

Because of the pendent and distant position of the toes and of their limited mobility, the circulation in them is naturally poorer than anywhere else in the body and therefore wounds of those parts heal with greater difficulty than any other wounds, even in normal individuals.

Those patients with thrombo-angiitis obliterans suffer from the effects of a weak circulation in the feet for a long time before the frank development of the disease, as evidenced by cold, excessive paleness, pains and cramps, intermittent claudication, occasional swelling of the feet, poor healing properties of tissues, etc. When, however, trauma to the tissues and blood-vessels is produced by the surgeon, the circulation is so much disturbed that the resulting wound refuses to heal, an ulcer is produced which is exquisitely painful, or a slowly acting infection sets in with the exposure of nerve terminals, excruciating pain and all the symptoms of thrombo-angiitis obliterans.

The following history is fairly typical and illustrates the point under consideration. The patient, thirty-seven years old, a Russian Hebrew, gave a negative family and personal history. He was a heavy cigarette smoker. About 18 months previous, he began to be troubled with coldness and slight pain in the right leg and foot, but was not inconvenienced till about four months before he was seen, when the little toe became red and swollen. A doctor, thinking that there was infection, cut into the toe and a wound resulted which refused to heal and became very painful; the patient was in agony day and night. The ulcer showed no tendency to heal. Pulsations in the foot were not palpable.

This history is fairly typical and illustrates the importance of obtaining a history and making a thorough physical examination when a patient presents himself with what might seem to be a trivial affection.

The following points in the history are suggestive of the disease:

Pain in the feet and legs not relieved by any orthopedic measures; cramp-like sensations in the calf of the leg when walking, forcing the patient to stop frequently; a tingling sensation in the toes; a burning sensation in the toes; one foot colder than the other; a history of frost-bite and of migrating phlebitis.

The following signs are indicative of the disease: a red or dusky red color of the toes or an excessively pale appearance of the foot; a rapid blanching when slightly elevated; an absence of pulsations in the dorsalis pedis or plantar arteries of the foot. When the pulsations in one foot are not perceptible or are weaker than in the other, arterial obliteration should be suspected and one should be highly conservative in the treatment of any complaint of the foot for which the patient may present himself.

Any surgical interference is contra-indicated because of the certain harm done to the circulation by the trauma to the tissues and blood-vessels, but instead, measures should be taken to improve the circulatory condition of the limbs by the various means at command.

The following conclusions are drawn:

1. Thrombo-angiitis obliterans is, as a rule, insidious in its development and many suffer from it for years without developing gangrene or the extremely painful characteristic ulcerations.

2. The symptoms and signs of the disease are very often mistaken for some other minor surgical affection, and surgical treatment is resorted to in order to relieve the patient.

3. The trauma to the tissues and the blood-vessels still more interferes with the nutrition of the parts; ulcers are produced which are extremely painful and do not heal rapidly, and often gangrene supervenes.

4. In any complaint of the foot, one should always bear in mind the possibility of this disease, and the physician should go thoroughly into the history of the patient and ascertain carefully the circulatory condition of the foot.

FRACTURES AND DISLOCATIONS

Buckner, H. T.: Treatment of Compound Fractures of the Forearm. *Ann. Surg.*, Phila., 1918, lxvii, 179.

The author's apparatus is also suitable for compound fractures in and about the elbow-joint. It consists of two parts: a metal cuff well padded and strapped around the humerus, and a metal frame that holds the forearm. The frame is made longer than the forearm in order that extension straps can be fastened to the forearm, and to the straps is fastened some rubber, that is, fastened to the cross-bar of the frame; thus permitting extension to be made upon the forearm if desired. A piece of canton flannel or muslin can be folded over the longitudinal bars and pinned, making a soft hammock for the arm to rest in. If necessary for firmer support, a well-padded splint can be put in the hammock beneath the forearm.

The frame is made adjustable, allowing elbow motion or fixation in flexion; it is open, so the wound can be reached for purposes of medication. By turning over the cuff that fits around the humerus and by turning over the cross-bars, the apparatus can be used on the opposite arm. The splint is light and can be made of either aluminum or iron; it is an ambulatory splint, and the patient can be up and around without retarding his recovery.

P. G. Skillern, Jr.

Vincent, W. G.: Greenstick Fractures of the Forearm; Correction of the Deformity by Continuous Elastic Traction. *J. Am. M. Ass.*, 1918, lxx, 78.

The treatment of greenstick fracture of the forearm by continuous elastic traction suggested itself to the author at a meeting of the New York Surgical Society, when Taylor described an elastic traction method of treating Volkmann's ischæmic contracture. Several months later the author applied this method to fractures of the forearm in children.

The case which he described was that of a child who fell three weeks previously and injured the left forearm. On examination a greenstick fracture of both bones was disclosed. There was considerable bowing. The callus was still soft so the arm could be partially straightened. This deformity returned as soon as the corrective force ceased.

Elastic traction was then employed, which consisted of the following: A padded wooden splint reaching from the elbow to the palm was applied to the anterior surface of the forearm and held in position by adhesive plaster straps. A fairly thick gauze pad, about one and one-half inches square and enclosing a bit of splint wood, was placed over the most prominent point on the back of the forearm, and a rubber band one-eighth or three-sixteenths of an inch wide was slipped over the hand and arm so that it encircled the arm at the center of the gauze pad, and was held in position by a strip of adhesive plaster. The rubber band was under moderate tension, and caused no interference with the circulation below that point. A gauze bandage was applied so as to be snug but not compressive from the palm to the elbow.

At the end of a week the bowing was found to have markedly decreased; but as the elastic band had been allowed to touch the skin at each border of the arm, the skin had been partially cut through at each of these points.

It is advisable to make the splint on the concave surface somewhat wider than the arm, and to pass a broad strip of adhesive plaster rather loosely around the arm over the splint and the gauze pad which has been placed at the point of greatest convexity. The rubber band is then adjusted over this and held in position by short, vertically placed adhesive strips anteriorly and posteriorly.

The author has since applied this method in six cases with very satisfactory results. He claims an earlier convalescence and freedom from pain.

M. A. BERNSTEIN.

Lewis, D.: Separation of the Lower Epiphysis of the Femur with Anterior Displacement and T-Fractures. *Surg. Clin. Chicago*, 1917, i, 1105.

Lewis states that traumatic separation of the lower epiphysis of the femur is usually due to hyperflexion or hyperextension of the knee-joint, and is probably most frequently caused by torsion of the leg when the latter is extended. Montgomery recently reviewed the literature and reports 27 cases, including two cases of Lewis'.

It is interesting to note that in 18 cases the injury was caused by the leg being caught in a revolving wheel or in machinery. In 7 cases it was caused by direct violence. The youngest case reported was eighteen months, the oldest twenty years.

Open reduction is the method of choice. The author believes that acute flexion may be tried, but in his cases the fragments could not be reduced nor retained after reduction until the fracture was exposed. The epiphysis could be easily reduced after the knee was flexed, when direction manipulation could be combined with acute flexion. Even after fixation with a Lane plate it seemed to be advisable to maintain some degree of flexion at the knee-joint, for there was a tendency for the fragment to be displaced somewhat when extension was attempted.

Of striking interest are the methods that have been used in the treatment of this condition. Amputation has been resorted to in 14 out of 27 cases. This was deemed advisable on account of the amount of damage to the knee-joint during the injury. Resection of the knee was resorted to in cases where a proper alignment of the fractured ends could not be obtained by the open operation. Lewis believes that resection should be limited, first to those cases in which the fragments cannot be brought into alignment by open operation, and when the deformity and disability resulting from failure to reduce the displacement would be greater than that resulting from shortening of the extremity. Secondly, the operation should also be limited to those cases in which the structures entering into the formation of the knee-joint are so badly damaged that the results following reduction of the displacement would be nil.

The first case which Lewis presents was a girl who sustained a separation of the lower epiphysis by catching her heel in a revolving wheel of a bicycle. Several attempts were made to reduce the deformity with a resulting rotation of the lower fragment and flexion of thirty degrees. At a second operation the lower fragment was reduced and rotated. It was retained in position by a Lane plate. The patient made a recovery with one and one-half inches of shortening. Lewis believes that shortening will increase, since the epiphysis has an influence on the growth of the leg.

The second case was that of a young man who, half an hour prior to his admission, was injured while riding a motorcycle. A T-fracture of the lower end of the femur was found. The lower end of the shaft was displaced interiorly, and the condyles fairly widely separated by the line of fracture, and displaced backward. No open operation was performed for a few days, on account of an extreme abrasion. During this time traction was carried out. The operation which was performed later was done for a final correction of the deformity. This consisted in the introduction of a nail transversely through the condyles. The shaft was maintained in place by a Lane plate. The nail may have to be removed at some future time, Lewis states, because they often work out to the skin.

In commenting on the introduction of nails into joint surfaces the author quotes Mann who says that nails and screws are tolerated in joint surfaces in the human as well as in experimental cases on animals with surprisingly little reaction.

M. A. BERNSTEIN.

Lane, W. A.: The Treatment of Fractures in Warfare. *Lancet*, Lond., 1918, cxciv, 4.

The author in this well illustrated article remarks that no surgical cases during the war have been so badly treated as simple fractures. This was due either to a lack of knowledge of the mechanics of fractures or imperfect technique. Lack of asepsis, improper strength of plates and screws, screws torn out because the gauge of drill and screws did not correspond, and the splinting of bone fragments in poor position are some of the causes leading to such poor results.

He concludes as follows:

1. Only exceptionally should fragments be fixed by plates when the wounds are very foul.

2. If found necessary under such circumstances, the screws should be inserted as far as possible away from the seat of the fracture.

3. Operative interference should be postponed until the wounds have healed, and consequently the tissues are free of organisms.

4. If a septic focus is noted during operation, a culture and vaccine should be obtained for use should infection ensue.

5. Should there be a suspicion of the presence of latent sepsis, the Carrel method of irrigation should be employed. Otherwise the wound should be completely closed.

6. Under no consideration should any bone be removed. Accurate apposition can be obtained if the surgeon knows how to bring it about.

7. Fragments of bone and callus should be saved to fill in any interval in the shaft.

8. Much heavier steel plates are needed in the malunited fractures produced by projectiles than are usually employed in less comminuted fractures in civil life.

9. Provided no strain shall be exerted on the junction, the sooner a patient with fracture of the long bones of the leg is got up and about, the more bone will be deposited. For this a good ambulatory splint is necessary.

10. If the interval between the fragments precludes union, a bone graft must be inserted.

11. Rarefying osteitis around screws and plates is evidence of faulty technique.

12. More skill is required for this work than any other war time operative procedure.

13. Sepsis and hæmorrhage are the two greatest risks. C. B. HOLLINGS

SURGERY OF THE BONES, JOINTS, ETC.

Shepherd, W. M.: Gunshot Injuries of the Elbow-Joint; Treatment by Early Excision. *Brit. M. J.*, 1918, i, 149.

Injuries inflicted in the region of the elbow-joint of necessity vary with the nature of the missile, the degree of sepsis, and the amount of damage to bone and soft parts. The ultimate results of injuries to the elbow-joint by gunshot cannot be regarded as satisfactory, as in the majority of cases there is complete ankylosis. Even if the wound remains aseptic, bony out-growth will in the long run inhibit movement to a considerable degree.

When the bones entering into the formation of the elbow-joint are badly comminuted, sepsis spreads in the surrounding parts and the patient shows signs of septic absorption. Whatever method of combating infection is undertaken, the results are the same, affording risk to both life and limb.

Primary excision of the elbow for tuberculous disease, fracture, dislocation, etc., yields good results and it would appear feasible that equally good results might be obtained by early excision of wounded joints. The degree of sepsis in the surrounding tissues forms no contra-indication to immediate excision. The amount of bone to be removed depends upon the nature of the primary injury.

In an early series in which the humerus was removed just above the epicondyle with the whole head of the radius and ulna, movement was long in returning. In a later series the lower end of the humerus was removed above the epicondyles and rounded well off, preserving the radius and ulna intact and not interfering with the attachment of the triceps to the ulna through the angled incision of Kocher.

If the amount of sepsis was great the wound was left open and treated with eusol gauze or the Carrel-Dakin method, the arm splinted at right angles until sepsis subsided. In milder cases the wound was partially closed.

The splint is left off as soon as the wound has healed and motion is encouraged.

The results, even in septic cases, were surprising, the patient being out of bed early and movement encouraged by the end of the fifteenth to the eighteenth day. The author states that the earlier the excision is performed, the more certain is the patient to have a good and serviceable arm with free movement. V. C. HUNT.

Cumston, C. G.: The Treatment of Wounds of the Knee-Joint from Projectiles in Warfare. *Ann. Surg.*, Phila., 1918, lxvii, 170.

The anatomical varieties of wounds of the knee are many, but may be roughly classified as follows: (1) Seton or tunnel wounds without fracture, the bullet passing directly through the joint or remaining free within. This event is not common. (2) Wounds with fracture of one of the bones composing the joint, such as crushing of the tibial plateau, crushing or comminuted fracture of the patella or the femur, one or both condyles broken off or crushed. (3) Wounds resulting in fracture of both tibia and femur, usually accompanied by fissures extending into the knee-joint. (4) Wounds with crushing of the articular surfaces, frequently with extensive destruction of the surrounding soft structures.

Some surgeons are prone to amputate with far too great a readiness in wounds of the knee, particularly when there is fracture. This practice is bad and should be condemned.

Amputation is absolutely and unquestionably indicated: (1) when there is crushing of the knee-joint or when the surrounding soft structures and bones forming the joint are so destroyed that they cannot be saved; (2) when there is a wound of the knee with injury to the large vessels in the popliteal space, but ligature may first be done if this is possible and an attempt made to preserve the limb, although generally the result will be unsuccessful; (3) immediate amputation must be done when there is gangrene of the leg or when a purulent arthritis is complicated by secondary hæmorrhage from the popliteal artery, as occasionally happens.

The important principle to follow is to disinfect the wound and then obtain thorough drainage and immobilization of the joint. Never suture the wound after resection; leave it open without a single stitch being taken.

Penetrating wounds of the knee-joint by projectiles without lesions of the articular ends of the bones, the projectile having made its exit from the joint cavity, have been relatively frequent, although they are seldom met with in any other joint. When seen early, the knee is swollen.

When there is apyrexia it is probable that the lesions to the joint are not serious, and rest in bed, compression and immobilization in a fracture gutter will soon cause the swelling to disappear. If at the end of three to four days the intra-articular fluid collection has not become absorbed, it is preferable to empty the joint. Never use an aspirating needle for this.

When there is pyrexia, arthrotomy is indicated and should be undertaken without the least delay.

The joint is irrigated once or twice daily with sterile salt solution or with some very mild anti-

septic solution, if preferred, after which it is good practice to spray the joint cavity with ether. As soon as there is apyrexia and the wound has taken on a red look, irrigation is to be stopped and aseptic dry dressings applied every two or three days according to the amount of discharge; the drains are removed.

The early removal of bullets, shrapnel or shell bits from the joint is imperative. The technique of the operator is described.

Penetrating wounds of the knee with bone lesions are very serious on account of their evolution, and this fact has led many surgeons to resort to amputation at once, a practice which should be most strongly condemned. Simple arthrotomy is not enough, as many times the epiphyses may be fissured. These fissures are the factors of osteomyelitis, an important cause for amputation in injuries of the knee-joint.

The proper treatment of these cases is typical subperiosteal resection if the amount of damage done is not so considerable as to require more than the excision of 10 cm., as otherwise the resulting shortening would leave a useless limb. When the damage to the bone is too considerable, likewise that of the surrounding soft structures, with lesions of the popliteal vessels, amputation is the only recourse left to save the patient, and in order to be as economical as possible, always perform circular amputation as low down on the thigh as possible and never suture the stump.

Arthrotomy will not prevent the nefarious evolution of infection and osteomyelitis, and in cases in which this operation has given good results, the lesions were confined to the synovia and no damage done to the articular surfaces.

To derive the greatest amount of good from subperiosteal resection of the knee-joint, the time at which it is undertaken is of capital moment. If the operation is resorted to some time after the receipt of the injury, between ten and twenty days, or if the operation is done following a primary arthrotomy, which, unfortunately, is not uncommonly the case, it may be termed a late resection.

Defined as above, late resection gives very bad results and is bound to give rise to disappointment and discredit this otherwise orthopedic and life-saving operation, which should be resorted to early, during the first three or four days following the receipt of the injury. It is understood that the anatomic diagnosis has first been made by means of radiography. EDWARD L. CORNELL.

Le Fur, R.: Osteosynthesis in War Surgery (L'osteosynthèse en chirurgie de guerre). *Paris chirurg.*, 1917, ix, 283, 405.

Le Fur reports 33 personal operations of osteosynthesis in war surgery, the case histories of which are detailed and illustrated. Twelve of the cases concern the upper limb and 20 the lower limb.

Osteosynthesis is a method which appeals to the younger surgeons of the new war school rather than the experienced men of the older types. But circumstances make the method particularly applicable to the traumatic fractures of war.

The operation is not a grave one. In Le Fur's operations, 7 on the humerus, 8 on the femur, and 10 on the tibia, at times carried out under conditions of severe infection, he has not had a single death.

Osteosynthesis has a special indication in war wounds which as a general rule are infected. In such case union is liable to fail, or if it does not, it is at the cost of enormous callus and malformation. In some cases where all the usual methods have failed to obtain consolidation, osteosynthesis has given excellent results.

The lapse of time between injury and osteosynthesis in the author's 33 cases varied from two days to thirteen months; 12 were done in a period less than two months; 5 in from two to four months, and 16 in from four to twelve months or over.

Le Fur discusses the indications for osteosynthesis in: (a) pseudarthrosis with or without large loss of substance; (b) according to the nature and progress of the fracture, whether aseptic or infected.

In the technique the principal points are: chloroform anæsthesia; the frequent incision of the existing wounds or scars; the osseous extremities are often greatly displaced or united by a malformed callus or bridge of bone, sometimes there is extensive periosteitis, and instrumental removal of all pathologic tissues therefore calls for much patience and delicacy so as to free the bone ends in good condition; treatment of the bone ends and especially of the medullary canal; reduction, coaptation and fixation of the fragments.

The author disagrees with Delbet who counsels the use of plates alone in fixing the fragments and condemns metallic sutures. Le Fur thinks the latter are well supported in an infected area, while the plate is often badly tolerated. If the wire suture is placed in healthy bone, it does not ordinarily cut it.

In many cases where plating failed, Le Fur has found the wire suture gave good results. He has used plates in 19 cases and silver or bronze wire in 13. In the upper limb suture was done in 9 cases successfully, and plating unsuccessfully 4 times. In the lower limb both plating and suture have equally given good results, though plating gave a slower consolidation.

Le Fur gives details of the technique both for suture and plating.

After operation the limb is immobilized in plaster. With regard to removal of the plates, Delbet thinks they should be allowed to remain from four to six weeks. Le Fur, however, thinks that from three to four weeks' stay suffices, especially if there is infection. If the limb is well immobilized nothing is to be feared. Sutures are better tolerated. In some cases they have been left three months or even indefinitely. The postoperative treatment consists of mechanotherapy, physiotherapy and heliotherapy.

The final results obtained by Le Fur are as fol-

lows: in the upper limb 13 cases have given 9 successes and 4 failures, including 3 cases of pseudarthrosis. In the lower limb 20 osteosyntheses gave 18 successes, 4 of them with delayed consolidation; 1 partial failure; and 1 total failure. In the latter case a bone graft was used.

By "success" the author means a completely consolidated bone with recovery of function of the limb. In the upper limb osteosynthesis with suture has given good union in every case where this was delayed because of muscular interposition or definite pseudarthrosis. W. A. BRENNAN.

Delagenière, H.: Cartilage Graft After Resection for Bony Ankylosis (De la greffe cartilagineuse pour assurer un bon fonctionnement articulaire après résection pour ankylose osseuse). *Bull. et mém. Soc de chir. de Par.*, 1917, xlii, 2195.

Delagenière relates the details of two cases of bony ankylosis of the elbow after gunshot wounds, in which resection was done. A piece of costal cartilage was removed from the left side and shavings of it placed between the sectional bone surfaces so that all empty spaces were filled.

After operation passive motion was begun with the greatest care. The final results of the operation were excellent, flexion and extension being complete. Radiographs showing the results accompany the article. W. A. BRENNAN.

Leriche, R.: Results of Extensive Primary Subperiosteal Removal of Bone Splinters (Résultats de l'esquillectomie sous-périostée large primitive). *Bull. et mém. Soc. de chir. de Par.*, 1917, xlii, 2270.

For a long time Leriche has advocated extensive primary subperiosteal removal of bone splinters as the only method of assuring the favorable outcome of war fractures. His views have met with much opposition, since such a course was believed to favor pseudarthrosis.

In the present report Leriche gives the results in a series of 20 diaphyseal fractures treated according to this method, from the seventh to the eighteenth hour after injury. The cases include 5 femur fractures, 5 leg fractures, 4 humerus fractures and 6 fractures of the radius or cubital bone.

Consolidation has been effected from the twenty-fifth to the fortieth day. The majority of the radiographs show an enormous callus mostly fusiform. The reason for the differences between Leriche's results and those obtained by others who condemn his method is that total or subtotal removal of bone splinters has been done, complemented sometimes by fragmental diaphyseal resections, a method which Leriche has always disapproved. He has always done a wide subperiosteal removal of such bone fragments as prevent access to the medullary canal. Another reason is the difference of opinion as to what constitutes periosteum. Many of those differing from Leriche consider the periosteum as a membrane of two layers, one hard and thick, the other fragile and adherent to the bone, from which it is difficult to detach it. Leriche considers the periosteum as representing the fertile part of the bone, the part utilizable for osteogenesis and not a thin layer adherent and detachable but merely the external part of the bone, representing the old embryonal cells of adolescence. If it is desired to keep the periosteum integral and fit for osteogenesis, this outer layer must not be stripped but the bone must be cut into with a special cutting file or rasp, and dealt with subperiosteally.

W. A. BRENNAN.

Delagenière, H.: Osteoperiostic Tibial Grafts for Reconstruction of Bone or Repair of Losses of Osseous Substance (Méthode générale et technique des greffes ostéopériostiques prises au tibia pour la reconstitution des os ou la reparation des pertes de substance osseuse). *Bull. et mém. Soc. de chir. de Par.*, 1917, xlii, 2288.

Delagenière removes his grafts from the internal face of the tibia. In order to obtain a good result it is necessary that the two faces of the grafts should be placed in contact with the living tissues and that no dead space should exist about them.

It is well to remove all cicatricial and sclerous tissue which might come in contact with the graft, the vitality of such tissues being much diminished.

No antiseptics hurtful to the vitality of the graft should be employed.

Good hæmostasis is essential in order to avoid hæmatomata; and the wound should be well tamponed.

Delagenière gives the technique of application of the tibial osteoperiostic grafts in (a) cranioplastics; (b) pseudarthroses of the maxillary with loss of bone substance; (c) pseudarthroses of the long bones with or without loss of bone substance; (d) stoppage of bone cavities; (e) massive facial and other grafts.

The progress is easily followed by radiography as well as clinically. It is seen that the graft becomes the point of growth of new bone which leads to union.

Delagenière has never observed an instance of resorption of the graft. When there is elimination, there is still a result, though the bone formed is less solid and thinner than otherwise.

The results of 118 recent cases were as follows: in 52 cranioplastics, 44 very good results, 7 good results and 1 failure with elimination; in 27 grafts for pseudarthrosis of the lower maxillary with loss of bone substance there were 10 very good results; 7 good results not definitely conclusive, 2 satisfactory, 3 partial, and 5 bad results.

In 21 grafts for pseudarthrosis and loss of substance of the long bones there were 15 good results, 3 partial and 1 negative result with elimination. There was 1 death from chronic septicæmia. Three fillings of bone cavities have resulted successfully. Sixteen grafts for massive facial defects have given 14 good and 2 incomplete results. One graft for the radical cure of hernia has been followed by a very good result. W. A. BRENNAN.

ORTHOPEDICS IN GENERAL

Gillette, A. J., and Chatterton, C. C.: The Orthopedic Treatment of Deformities Resulting from Incurable Paralysis. *Minnesota Med.*, 1918, i, 1.

This article deals with various forms of paralysis which are often confused with anterior poliomyelitis. Progressive muscular paralysis is discussed in a broad general way and the suggestion is made that these cases are "greatly benefited for years, but never cured, by applying braces and supports."

Hereditary ataxia or Friedreich's disease, caused by sclerosis of the posterior and lateral columns of the cord, and frequently accompanied by distortion of the feet, legs or back, is often benefited by braces.

Cerebral paralysis of childhood (spastic paralysis) is very frequently confused with anterior poliomyelitis; cerebral paralysis is always a spastic paralysis with increased reflex and usually affects the mentality, while acute poliomyelitis is always a flaccid paralsyis with diminished or absent reflexes and does not affect the mentality in any way.

In treating spastic paralysis, the deformity must be overcome by tenotomies before braces are applied.

Pseudo-rhachitic paralysis is frequently confused with anterior poliomyelitis. The one symptom which is always present in pseudo-rhachitic paralysis is that the reflexes are practically normal and the child can, with some effort, move its extremities.

Scorbutic children have been mistaken for anterior poliomyelitics, in the early painful stage. The normal reflexes, lack of atrophy and the spongy gums will differentiate. Volkmann's ischæmic paralysis, Erb's paralysis and Charcot's joints are sometimes mistaken for anterior poliomyelitis. The localization, history and course of the disease will usually be sufficient evidence to make a differentiation.

Charcot's joints are best treated by braces since excision is out of the question, for the bones will not unite, and amputation is useless as the inability to locomote is due to disease of the spinal cord.

R. B. Cofield.

Gosman, G. H. R.: Brief Studies in Flat-Feet. *Mil. Surgeon*, 1918, xlii, 56.

The author believes:

1. That subjectively symptomless flat-foot, in civil life, quickly becomes a source of trouble and invariably gives acute symptoms under the burden of intensive training.

2. That any given case objectively showing a flat arch, even though of the first degree, should be rejected for enlistment, unless all motions of the toes and ankles are free to the extreme degree.

3. That their system of recording, i. e., making imprints by applying ordinary finger print ink to the sole, after which the foot is placed upon paper lying on the floor and the man directed to stand squarely upon it, indicates by comparison the degree of improvement in motility under muscular exercise properly conducted.

4. That their method employed since August, 1917, in the treatment of flat-foot is the plan best adapted to the needs of men in the army undergoing intensive military training.

5. That the non-resistant exercise plan is most effective and shows results well calculated to make its adoption in military practice advisable.

The treatment recommended is as follows: The toe exercises are the first ones taken up. The men stand on a raised platform like a two-inch plank; they are then directed to flex the toes to the extreme point of flexion with a hard pull of the flexors of the sole of the foot at the extreme point of flexion. This is followed by extension without effort. This exercise is repeated continuously for from five to ten minutes.

The second exercise is a continuation of this flexion of the toes on the sole of the foot, bringing into action the tibialis anticus muscle. At the extreme point of inversion or adduction, a strong hard pull is made, then the foot is allowed without any muscular effort to resume its usual position.

At the beginning fifteen or twenty minutes are sufficient for the entire routine of exercise; later a full half hour.

Philip Lewin.

SURGERY OF THE SPINAL COLUMN AND CORD

Silva, R. H.: Two Cases of Spondylosis (Deux cas de spondylose). *J. de radiol.*, Par., 1917, ii, 673.

In the first case presented by the author the cervical region showed ossification of the prevertebral ligament, especially about the fourth, fifth and sixth cervical vertebræ. There was no osseous rarefaction. In the dorsal region there was bony union of the menisci of the first vertebræ with osseous density, the lesions predominating in the anterior part of the vertebræ. The shoulder joints were normal. The hip joints showed deformity with ankylosis. The scapulæ showed enlargement of the transverse diameter. There was intense calcification of the tracheobronchial ganglia.

In the second case the cervical region showed ossification of the prevertebral ligament, which was quite rigid; osseous density about the spinous processes and ossification of their ligaments; deformity of the glenoid cavities; calcification of the tracheobronchial ganglia; the humeral head was normal in appearance.

It is known that spondylosis, first described by Marie in 1898 and afterward studied by Leri, is a disease characterized essentially from the clinical viewpoint by a more or less complete ankylosis of the vertebral column and the shoulder and hip-joints. It has been ascribed to syphilis, tuberculosis, or myositis ossificans. The author thinks that the

marked tracheobronchial adenopathy which completely obscured the pulmonary hilum in both of these cases indicates an infection either tuberculous or gonorrhœal. W. A. BRENNAN.

Bertolotti: Contribution to the Study of Defects in Differentiation of the Vertebræ, Especially of the Fifth Lumbar (Contribution à l'étude des défauts de différentiation des vertebræ, et particulièrement au niveau de la quinte lumbaire). *J. de radiol.*, Par., 1917, ii, 673.

By defects in the differentiation of the vertebræ is understood the fact that a given vertebra, cervical, dorsal or lumbar, does not show those characteristics which differentiate it from vertebræ belonging to other spinal segments, and that it may even show monstrosities of phylogenetic order. Abnormal vertebræ may acquire the characters of the metameres situated above or below them. Thus the seventh cervical sometimes shows the character of a dorsal vertebra and the anomaly of a cervical rib. Such anomalies may pass without recognition, but in certain cases they become a source of great trouble and danger. An atlas defect, for example, characterized by the fusion of its lateral masses with the occipital condyles or by an incomplete ossification of the posterior or anterior arcs, may give rise to serious consequences.

The fifth lumbar vertebra normally may acquire the characteristics of a sacral vertebra. This relatively frequent accident has the marks of a real pathological entity which appears in individuals towards the end of their growth period without in any way previously suggesting its presence. Lumbar neuralgic pains radiating into the lower limbs, with all the characteristics of rebellious sciatica, atrophy, and sometimes considerable impotence, constitute these symptoms.

Radiography shows an abnormal unilateral or bilateral development of the fifth lumbar vertebra which has more or less intimate relations with the sacrum. Examination shows the lumbar region shortened, the back flat, the bi-iliac diameter increased; there is some dorsolumbar kyphosis and lumbosacral angular scoliosis. The diagnosis must be differentiated from vertebral tuberculosis and urinary calculi. The author affirms that in the large majority of cases the so-called essential sciatic neuralgias are caused by vicious formations of the sacrolumbar region. W. A. BRENNAN.

SURGERY OF THE NERVOUS SYSTEM

Williamson, R. T.: The Vibrating Sensation in the Differential Diagnosis of Affections of the Spinal Cord and Peripheral Nerves. *Lancet*, Lond., 1918, cxciv, 216.

Williamson calls attention to the value of the vibrating sensation in the differential diagnosis of affections of the spinal cord and peripheral nerves from hysteria, functional diseases and malingering.

He tests the vibrating sensation by a large vibrating tuning-fork, the foot of which is placed on a subcutaneous bony surface, such as the malleoli, the inner surface of the tibia in the leg, the anterior superior iliac spine, the styloid process of the ulna at the wrist, the sternum, etc.

Loss of vibrating sensation is often one of the earliest signs of sensory affection in lesions of the spinal cord. It is often lost before other forms of sensation are affected.

In the differential diagnosis of organic paraplegia from hysteria, functional disease, and malingering, he calls attention to the following point. In any case of paralysis or paresis of the legs, if the vibrating sensation is lost, while other forms of sensation are recognized, and the patient persists in this statement in spite of suggestions to the contrary, malingering or hysteria is very improbable. In malingering or hysteria, if sensation is affected, the vibrating sensation and other forms of sensation will usually be lost together.

Vibrating sensation has been lost in cases of spinal disease which have come under the author's observation that were probably due to combined posterolateral degeneration and lost at a very early stage before other forms of sensation had been lost. He quotes the case of a man called for military service in 1917. The patient stated that he considered himself unfitted for military service because of a weakness or heaviness in his legs and slight unsteadiness in walking. Little could be detected on examination. On the next examination no signs of cerebral disease or tabes could be detected, and the slight unsteadiness in walking could have been attributed to neurasthenia or malingering but for two signs. The knee-jerks were normal; no ankle clonus could be obtained; and the only definite sign of organic disease was the loss of the vibrating sensation on the legs and the change in the plantar reflex. Six months later he showed well-marked signs of organic disease.

Williamson calls attention to the value of testing the vibrating sensation in the numerous cases of lesions of the cord and peripheral nerves now coming under observation in military practice.

G. W. HOCHREIN.

Langley, J. N.: The Effect of Intermittent Stretching on Muscles and Nerves After Nerve Severance. *Brit. M. J.*, 1918, i, 141.

One of the problems of the treatment of cases of nerve severance is the time during which movement of the paralyzed muscles can be allowed and the extent to which it can be carried on with safety. In the period before suture the practice is to allow some degree of movement, while for a time after suture

no movement at all is allowed, for, as Sir Robert Jones says, "the slightest stretching of a muscle on the point of recovery disables it again;" also prolonged stretching of a muscle causes prolongation.

The effect of intermittent stretching might be advantageous or the reverse, according to the weight which is laid on particular events. On the one hand it forces lymph from the muscles, and so presumably metabolic products, and this one would expect to be advantageous. In denervated muscles connective tissue increases and part of the late contracture is attributed to the shrinking of the newly formed tissue. The connective tissue when first formed is soft and extensible, and intermittent extension will elongate the developing fibers, so that when they shrink there may be less tendency to contracture. On the other hand, muscles after denervation rapidly lose weight and in this state cannot stand as great a strain as normally.

In an experiment on an animal it was shown that stretching the paralyzed muscle a great number of times to about the full normal extent did not appreciably affect the atrophy. The author has made observation on muscles in later stages of atrophy up to about three months and has seen no sign that they are injured by moderate intermittent tension, or by the degree of strain exercised by antagonistic muscles, provided this is not prolonged.

The author concludes from his observations that, in the pre-suture period, fairly free extension and flexion movements are not likely to injure either muscle or nerve, but forcible movements are always to be avoided.

As regards stretching of a nerve by movement after nerve suture, where the nerve is not shortened, restricted movements can be made without injury. In experiments on animals it is shown that a considerable degree of movement does not prevent rapid regeneration in an unshortened nerve. In man, the author concludes, when the nerve is not shortened, slight movements can be begun in a few weeks and rapidly increased in extent.

In the great majority of cases in man the nerve has to be shortened, and until the ends become firmly joined a very slight movement may be sufficient to rupture the fibers at the junction and cause a more or less serious delay in regeneration. The greater the shortening of the nerve, the greater the risk. It would probably be better to insert a piece of fresh nerve when much nerve has to be excised.

It is generally recognized that if a nerve has been severed, the sooner it is sutured the better. The difficulty is in distinguishing between complete nerve compression which will recover without operation, and nerve severance which requires operation. In simple compression new fibers are formed in the part of the nerve just below the point of injury long before there is any sign of recovery on stimulating muscles and motor points. If, then, this region could be stimulated without the stimulation spreading to the normal nerve, it would give rise to sensation, and compression would be diagnosed. V. C. HUNT.

MISCELLANEOUS

CLINICAL ENTITIES—TUMORS, ULCERS, ABSCESSES, ETC.

Bullock, F. D., and Rohdenburg, G. L.: A Histological Study of Heterologous Tumor Grafts. *J. Cancer Research*, 1918, iii, 31.

While the death of some heteroplastic tumor grafts may, perhaps, be attributed to the action of lymphocytes and connective tissue, there is no histological proof that it is always determined by these factors. Tumors elicit in foreign species a reaction of much the same character as that produced in homologous animals. Removal of the spleen has no influence upon the receptivity of an animal toward heteroplastic tumor grafts, nor does splenectomy favor the growth of heteroplastic tumor grafts. One inoculation of a heterologous tumor does not always render an animal immune to the temporary growth of a subsequent heterologous graft. MAX KAHN.

Lumière, A.: The Laws of Cicatrization of Cutaneous Wounds (Les lois de la cicatrisation des plaies cutanées). *Rev. de chir.*, Par., 1917, liii, 656.

Lumière reviews the work of Carrel and others who studied the relation between the size of a wound and its rate of cicatrization. Carrel found that cicatrization proceeded more rapidly at the beginning than at the end of the repair period; that cicatrization was proportionate to the surface of the wound; and that the process of contraction was the most important factor in the repair of a wound.

Such deductions have been translated into mathematical formulæ which the author gives and interprets.

The author has made a number of clinical observations and experiments in various hospitals; also experiments on dogs in an endeavor to verify the laws of cicatrization.

His findings differ from those of Carrel. For experimental, non-infected wounds, frequently dressed by the antiseptic method, in a given animal species, he deduces the following laws of cicatrization:

1. The rate of cicatrization of a wound is constant; that is to say, the wound cicatrizes as rapidly toward the end of the healing period as at the beginning.

2. The time necessary for cicatrization is proportional to the greatest diameter of the wound.

3. In healthy animals of the same age and in the same species, the rate of healing is practically the same. W. A. BRENNAN.

Tuffier, T., and Desmarres, R.: A Note on the Progress of Cicatrization of War Wounds. *J. Exp. Med.*, 1918, xxvii, 165.

The therapeutic effect of a physical or chemical agent on the cicatrization of wounds can be ascertained empirically, the authors state, from the rate of the process of cicatrization, and to demonstrate this effect scientifically it is necessary first to determine exactly the normal progress of a sterile wound, that is, the course of cicatrization in a given time, a unit of measure being thus obtained. When the normal progress of the cicatrization of a wound that is kept bacteriologically sterile is known, it becomes possible to study the changes taking place under physical or chemical influences.

The authors are aware that to subject organic processes to a mathematical formula is always a hazardous procedure. However, they believe that by eliminating certain causes of error and adopting the controlled conditions of experimentation, results can be obtained which show the exact coincidence of mathematical forecasts with clinical evidence. This parallelism, they believe, is constant and regular; and if it becomes irregular, it is due to an error in therapeutic methods, thus furnishing a means of control of the care given to the patient.

The present work is the result of observations on 20 cases in regard to the sterilization of the wounds as well as their rate of healing.

The authors point out that cicatrization results from two processes, contraction of connective tissue and epidermization, contraction being in reality a mechanical action connected with the appearance of granulations on the surface of the wound. It is also known from the work of du Nouy that a sterile surface wound heals in a period of time which can almost invariably be predicted by a simple calculation. It has also been shown by du Nouy that the index is clearly connected with the age of the patient and the initial surface of the wound; from a considerable number of observations, a short table has been constructed which, on the assumption that the wound is sterile, makes it possible to determine the index *a priori* after only one measure of the surface, when the age of the patient is known. The index varies approximately between 0.02 and 0.08.

From their experiments the authors suggest some hypothetical conclusions bearing on the evolution of cicatricial tissue. The arterial circulation deposits in the wound chemical substances necessary for contraction of the wound and for epithelial proliferation. When the biologic process was not hindered by any special or severe bacterial infection, this deposit was as regular as the circulation itself, and enabled them to determine in advance the date of cicatrization. It even seemed as though when the epidermization process was retarded by a slight infection, the substances necessary for epidermization were stored up in the wound, and when the delay due to infection was removed, the epithelium found an accumulation of nutritive substances and, so to speak, made up the lost time.

Moreover, when an infection entirely or partially stopped epidermization, they observed that after the infection had disappeared the progress of new epidermization was much more rapid than normally; it even passed the calculated curve. The infection apparently left in the wound the chemical substances which activate epidermization.

The existence of these physical or chemical activating agents was indicated again by two anatomical clinical facts. In treating a scalp wound in which there was practically no epidermization for many months, they applied over the entire surface of the sterile wound dermo-epidermic grafts of fœtal skin. After apparently taking, the grafts were absorbed and disappeared, but epidermization of the periphery of the wound, which hitherto had not progressed, took place abundantly, almost a hundred times as much as before.

The authors believe that by mathematical measurements the problem of the action of various organic fluids on the cicatrization of wounds can be solved. GEORGE E. BEILBY.

Rishmiller, J. H.: The Treatment of Surgical Shock. *J.-Lancet*, 1918, xxxviii, 43.

The remedies employed are: (1) adrenalin chloride; (2) pituitrin; (3) blood transfusion; (4) hypodermoclysis; (5) enteroclysis; (6) intravenous saline; (7) morphine.

The blood-pressure should be taken in every case, as digital estimation may be misleading. Operations on the lower extremity may be done under local anæsthesia, since this by blocking nerves has a tendency to prevent shock.

The author reports a case in which there were very extensive crushing injuries, much loss of blood, and extreme shock. He adds conclusions taken from a previous paper on shock and its surgical significance in the *New York Medical Journal*, March 10 and 17, 1900:

1. Sensory nerve irritation of sufficient force to produce vasomotor exhaustion causes vascular nerve paralysis.
2. Children and the aged are very susceptible to shock.
3. Hæmorrhage, especially venous, is the principal cause of shock.
4. There are two distinct varieties of shock: (a) prostration with indifference; (b) prostration with excitement.
5. Peritoneal absorption of septic material causes death through shock before peritonitis can develop.
6. Subnormal temperature, irregular pulse, superficial respiration, cold anæmic extremities, and clammy perspiration contra-indicate operation.
7. The severity of operative shock depends on the length of operation and the degree of anæsthesia.

H. J. VAN DEN BERG.

Gatellier: A Study of Shock in the Severely Wounded (Contribution à l'étude du shock chez les grands blessés dans une ambulance de l'avant). *Bull. et mém. Soc. de chir. de Par.*, 1918, xliv, 11.

In Gatellier's ambulance service 6,667 wounded have been observed since May, 1915. He has therefore had abundant opportunity to observe cases of shock. He divides shock into the nervous, hæmorrhagic, toxic, and septic varieties. The so-called pseudo-shocked cases due to exhaustion and cold are not included.

In hæmorrhagic shock, no matter how desperate the condition, immediate operation is indicated. In 112 severe cases Gatellier operated in 103. The 9 others died before operation. Of the 103 operated cases, 96 recovered, 7 died. All were ligated. That is to say, ligature in full shock has given Gatellier 93 per cent recoveries. Ether is used as the anæsthetic and at the moment of ligating, an assistant injects 500 ccm. of adrenalized salt solution intravenously.

Gatellier distinguishes toxic shock from hæmorrhagic and nervous shock. When such is found, it is generally in cases of large open muscular ruptures in the buttock or thigh regions, with fractures of the femur, etc.; the muscles are discolored and cold. There is a sort of stupor or death of the muscles. Gatellier thinks that the hæmostatic band aids in bringing about this condition of shock if left too long. He is of the opinion that shock in such cases is due to an intoxication aggravated by delay. Hence he favors immediate surgery. He either amputates at once or does a large myectomy. It is followed by injections of ether, serum, etc. Thirteen cases have been so treated and all have recovered. The removal of the source of toxin relieves the shock.

This immediate operative treatment of shock, at least of certain cases, would have previously appeared revolutionary or may even yet be so considered by many. Early operation under the conditions stated is considered by the author to be the essential treatment of shock and like all other war surgery is a matter of military organization.

W. A. Brennan.

Timme, W.: A Case of Pluriglandular Disturbance; Organotherapy; Cure. *Arch. Pediat.*, 1917, xxxiv, 901.

The case of a boy is reported. His weight at birth was 5⅛ pounds; at the end of his first year, 23 pounds. Dentition was normal. Measles and pertussis occurred at 3 and 6½ years of age. Tonsillectomy was done two years before he was seen. Both testicles were undescended until 1½ years previous, but at examination they were in the inguinal canal.

The father had psychosis probably of a dementia precox character, and also had a tendency to acromegaly. The grandmother had a mild case of hypothyroidism, as did one maternal uncle.

The Wassermann test proved negative. The boy's condition gradually became worse, he lost weight, his fatigue became extreme, the fingers became purplish and swollen at times and the pus increased. In July, 1915, numbness in the extremities developed with increasingly painful paroxysms, especially at night. At these times paræsthesia also supervened and sleep was almost impossible. On hot days the extremities were better.

When examined in December, 1915, the boy was seven and one-half years of age, poorly nourished, pale and anæmic. His posture and gait were normal; height was 46¾ inches, and weight 42⅛ pounds. There was a generalized weakness of the entire musculature, but no atrophy, no tremor, and no inco-ordination. Blood-pressure was 80 systolic and 45 diastolic; pulse was 85 while at rest. The heart was normal, though its musculature seemed weak. There was a vasomotor paresis.

The boy lacked self-control, and was pugnacious and resentful, he was not amenable to discipline, and was impatient of his mother's criticisms, answering back with lowering brow and patent enmity. He took an interminable time to dress and undress for the examination and no amount of persuasion could change this. He lacked initiative and was becoming continually more dull and sluggish.

The radiograph showed a lack of development of the bony structures, and an X-ray of the skull showed a much contracted sella turcica, but with clear sinuses. The hair was lustreless and brittle.

Pituitary medication was begun December 14, 1915, in the form of whole gland capsules twice a day. Three drops of adrenalin in salt solution were given by mouth three times daily after meals.

By January 18, 1916, he had improved mentally. His stature had increased one-fourth of an inch; his weight was 43 pounds. As his weight gradually increased, it was thought wise to begin with small doses of thyroid, as this gland was second only to the pituitary in its deficiency. The adrenalin was stopped and thyroid, gr. 1:10, twice a day was ordered.

On October 21, 1916, his weight was 47 pounds; height 48⅞ inches, a gain of 2⅛ inches in height in nine months. Both testicles were well descended into the scrotal sac. The hair was glossy and smooth, the extremities in perfectly normal condition. His mental condition was excellent and undergoing the usual transitional period, childish antics and silly behavior, with a sunny disposition.

Examination on June 23, 1917, preparatory to going to a boy's camp for the summer, showed his weight 51¼ pounds, and height over 50 inches. The general condition of the body and organs was excellent. His mentality was also excellent. He was discharged as cured. Edward L. Cornell.

Koch, W. F.: Tetany and the Parathyroid Glands. *Med. & Surg.*, 1918, ii, 9.

The author believes that the calcium deficiency has little to do with the essential etiology of parathyroid tetany, thus contradicting the findings of MacCallum, Voegtlin, Lambert and Vogel. Koch

finds methyl cyanamide in the urine of parathyroidectomized dogs. This substance was isolated from the urines of 47 dogs after parathyroidectomy, though in exceedingly small quantities, namely, 1.2 gr. of the picrolonate of the cyanamide and 2 gr. of the picrolonate of its polymer trimethylmelamine. Koch assumes that this substance is the mother substance of the guanidines, which induces intoxication symptoms. Koch suggests acid therapy instead of calcium therapy. It should be so regulated as to keep the guanidine production below the threshold of toxicity without producing a distinct acidosis. All that is necessary is to maintain the normal electric neutrality of the blood.

MAX KAHN.

Bernhard, A.: The Chemistry of Transudates and Exudates, with Reference to Their Non-Protein Nitrogenous Constituents. *Interst. M. J.*, 1918, xxv, 188.

The author concludes that his results show definitely that the non-protein nitrogenous constituents of transudates and exudates are comparable with the non-protein nitrogenous constituents of the blood, and that they are increased in nephritis with retention, while the sugar content of such fluids is increased in diabetes.

MAX KAHN.

SERA, VACCINES, AND FERMENTS

Krotoszyner, M.: Practical Value of the Complement Fixation Test for Gonorrhœa. *Calif. St. J. Med.*, 1918, xvi, 90.

Easily the most important article of the last few months for the urologist is the article on the gonorrhœal fixation test. Every urologist in this country should study this article. Many of the author's statements are striking and convincing: "Several observations in which the positive reaction persisted on repetition of the test concerned old men with healthy wives and large families. In most of these cases a gonorrhœal attack in early manhood was admitted."

Krotoszyner finds that 40.5 per cent of 66 cases of so-called sexual neurasthenia were positive. Again, "of 18 husbands, 16 had a positive and two a negative reaction. Both wives of the husbands with the negative reactions had a positive test."

The author tabulates his cases seriatim in tables. The laboratory work was done in the Pacific Wassermann Laboratory and checked by the German Hospital Laboratory.

The author's conclusions are worthy of being embodied entire because they are the result of an immense amount of study and large material. He studied 403 cases on which he made 500 complement fixation tests. His conclusions are:

Standardized technique and antigens are indispensable prerequisites toward rendering laboratory reports upon the complement fixation test for gonorrhœa more uniform and reliable.

The test is valueless for practical purposes, unless uniform reactions can be obtained in at least 80 per cent.

Only strongly positive reactions are of diagnostic significance and may occasionally lead to the detection of a hitherto unsuspected specific focus.

A weakly positive, or doubtful reaction is in all probability entirely valueless for practical purposes, since an old and non-infectious, encapsulated gonococcic focus may produce a strongly positive result, while a matrimonial candidate with an infectious urethro-prostatitis may exhibit a weak or negative reaction.

It is safe to say that the complement fixation test will never assume the importance for gonorrhœa that the Wassermann test possesses for syphilis.

A. C. STOKES.

BLOOD

McJunkin, F. A.: A Simple Technique for the Demonstration of a Phagocytic Mononuclear Cell in Peripheral Blood; First Report of Studies on the Mononuclear Cells of the Blood. *Arch. Int. Med.*, 1918, xxi, 59.

The purpose of this report is to describe a method by which a mononuclear cell constantly present in normal blood may be shown to be phagocytic, and to point out certain characters of the cell that suggest its origin.

Attempts at the identification and classification of non-lymphocytic mononuclear leucocytes have for the most part been based on staining characteristics. Methods dependent on the functional activities of the blood-cells have, however, been employed, and of these vital staining has attracted most attention. The usual statement of observers employing this method has been that cells which stain vitally did not appear in the peripheral blood, or appeared there in negligible numbers.

The method used was simple, but some of the details required considerable care in their execution. The object to be attained, the author states, is to bring the leucocytes into contact with fine particles of carbon at the body temperature and under exact and uniform conditions, and then to fix and stain them properly.

The functional behavior of fixed tissue cells was constantly made use of in their identification, and of the cell functions phagocytosis has been one of importance and has attracted a great deal of attention. In general, the phagocytic properties of the cells commonly met with are known. Fibroblasts, identified by the use of appropriate stains, rarely or never have been found to have incorporated foreign particles within their cytoplasm; none of the enormous number of lymphoblastic cells found in various normal and pathologic tissues were phagocytic; while polymorphonuclear neutrophiles incorporated different bacteria and ingested non-bacterial substances.

In the lesions of typhoid fever, in tubercles and

in other pathologic processes, endothelial cells divided, became free and migrated through the vessel wall into the extravascular tissue. This was seen in single oil-immersion fields of tissue that were perfectly preserved. These free mononuclear leucocytes of endothelial origin were frequently phagocytic for other tissue cells, red blood-corpuscles, certain bacteria and for various non-bacterial particles such as carbon. The mononuclear cells of the blood shown by these experiments to be phagocytic for carbon corresponded in morphology and phagocytic properties to the endothelial leucocytes of the tissues, and it seemed to the author likely that this class of leucocytes might prove to be of endothelial origin. That they are not related to the polymorphonuclear leucocytes, he states, was clearly shown by their phagocytic properties.

In order to determine the behavior of tissue cells during life, certain coal tar and natural dyes were injected into animals intravenously and by other routes, and the tissues examined after a varying number of hours and days. Vitally stained cells were said not to be present in the peripheral blood of the animal treated in this way, but granules of the stain were present in tissue cells spoken of as macrophages, which is a term implying that the cells containing the granules were capable of phagocytosis. The term phagocytosis, McJunkin states, is not correctly applied to the passage of a substance in solution into the protoplasm of a living cell, although it is there changed over into insoluble granules. He does not consider it possible to say whether all phagocytic cells are vitally staining or not, but certainly intravital staining as commonly carried out is useless for the demonstration of phagocytic cells in the blood.

Since none of the small mononuclear cells that were typical lymphocytes ingested the carbon, it was evident to the author that lymphocytes and phagocytic mononuclear cells were comprised in the mononuclear group of leucocytes. He believes that all of the phagocytic cells, owing to their resemblance to large lymphocytes especially, cannot be accurately identified by means of any of the blood stains now in common use without the employment of a reaction to determine their phagocytic properties.

GEORGE E. BEILBY.

Meleney, F. L.: A Study of Ante-Operative and Postoperative Blood Counts in Non-Infective Surgical Conditions. *Ann. Surg.*, Phila., 1918, lxvii, 129.

With the purpose of finding out the extent of postoperative leucocytosis in man and also arriving if possible at some conclusions regarding the prime factors in its production, 51 cases were studied in the wards of the Presbyterian Hospital. These cases were chosen at random, the only cases not accepted in the series being those in which an acute infection was present before operation or a marked infection expected after it.

An ante-operative count was made on the afternoon before the morning operation; in only a very few cases count was made just before operation. A second count was made on the afternoon of the day of operation, approximately six hours after operation. Another count was made every afternoon following until it returned either to normal or to the initial count. In making averages, those cases which fell to normal before the twelfth day were considered to maintain their final count until that day.

The findings were as follows:

In surgical cases undergoing operation without infection, the white cells increase in number and about six hours after operation have more than doubled.

The response is due almost entirely to the outpouring of polymorphonuclear cells.

There is a trivial rise in red cells after operation, but in the subsequent ten days this is followed by a progressive anæmia with an average loss of about one-half million cells per cmm.

The white cell count may be expected to fall rapidly in clean cases and reach normal on the fourth day. In infected or contaminated cases it will fall much more slowly.

Infection and contamination have nothing to do with the initial rise, but on the second or third day after operation they will tend to keep the count high.

Other things being equal, the count will be higher in those cases in which there is severe trauma to the tissues, many sutures and ligatures used, considerable loss of blood and long anæsthesia, especially with ether.

Normal individuals will produce a higher leucocytosis than abnormal types.

EDWARD L. CORNELL.

Propping, C.: Gangrene Due to Ligature of Important Arteries. *Muenchen. med. Wchnschr.*, 1917, No. 18.

The author points out that in 1916 Sehrt recommended that in ligating an important artery, ligature of the corresponding vein should be done. Sehrt explained that the capillary supply in the region may be insufficient owing to a too rapid venous deflux and the nutrition of the region may suffer, giving rise to gangrene. The cause of such a gangrene is not due to a want of collateral circulation, but is the result of a disproportion between the collateral arterial flow and the venous deflux which causes a disturbance in the equilibrium of these two factors.

Gangrene of a limb is more frequent after ligature of the artery alone. Sehrt found that in the lower limb there was gangrene after ligature of an artery alone in 20 per cent of the cases, but after simultaneous ligature of the artery and corresponding vein there was gangrene in only 9 per cent of the cases. In the upper limb after ligature of the artery, gangrene occurred in 7.8 per cent of cases, but there was

no case of gangrene after ligature of the artery and vein. The smaller percentage of gangrene in the upper limb is accounted for by the larger number of veins.

The practical results of the proposal to ligate both artery and vein seem to be to cure stasis by means of stasis; to meet the diminution of the capillary current by a restriction of the venous deflux and re-establish the disturbed equilibrium between inflow and outflow. In cases where gangrene is threatened, the contemporaneous ligature of artery and its accompanying vein is counseled. The author particularly recommends ligature of the internal jugular vein when the internal carotid is ligated. W. A. BRENNAN.

Newell, E. D.: Blood Transfusion in Emergency Surgery; Sodium Citrate; Indirect Method. *South. M. J.*, 1918, xi, 145.

Newell favors the sodium citrate method of transfusion. The advantages he cites as follows: (1) the equipment is inexpensive and always at hand; (2) the technique is quick and as simple as an intravenous infusion; (3) no trained assistants are necessary; (4) the donor need not be in the same room with the recipient; no psychology; the recipient need not even be removed from the bed; (5) no blood-vessels are divided or destroyed; no ugly scars are left; (6) the quantity given can be accurately measured; and there is no clotting of blood.

He lists the following disadvantages: (1) possible biological changes in the blood; this, however, is to be ascertained by further investigation; (2) chills occur after administration of citrated blood in twenty to twenty-five per cent of cases, but they are never serious; (3) possible toxicity of the blood if extremely large quantities of the citrated solution are given, but 2,500 ccm. of a 0.2 per cent solution can be given before the average dose is obtained, and this quantity is seldom, if ever, administered at one sitting.

The technique that Newell recommends is a combination of the Lindemann and Lewisohn methods. Drawing the blood first into a 200 ccm. syringe containing 2 ccm. of a 2 per cent sodium citrate solution, this is injected into the vein of the recipient and ten to fifteen minutes are allowed to elapse to await developments. If there is no anaphylactic action, two 200 ccm. syringes full of blood with the requisite amount of sodium citrate solution in them are drawn off and injected through a smaller needle into the recipient at pleasure. After the first 200 ccm. are administered, the syringe may be disconnected from the needle and the second syringe attached to the same needle.

The syringes with the citrated blood can be kept stored at almost any temperature, transported any reasonable distance, and used at the pleasure of the physician. There is no change in the blood from contact with air, with the graduate, rod, or gravity outfit with its long tubing. This method, which requires three syringes with two needles, brings transfusion down to the plane of intravenous medication. ALBERT EHRENFRIED.

Speidel, W. C.: Transfusion of Blood by the Direct Method with Observations Covering an Experience with over Forty Transfusion Operations. *Northwest Med.*, 1918, xvii, 44.

Among the cases treated are 16 of pellagra, 7 of pernicious anæmia, water gas, carbon monoxide poisoning, crushing injury of the leg, gunshot wound of the leg, stab wound of the chest with hæmatothorax, hæmorrhage neonatorum, puerperal sepsis, thyroidectomy plus hæmorrhage, intestinal hæmorrhage due to eroding duodenal ulcer, cases in which transfusion proved of sustaining and palliative value, but in some of which the results were materially complicated by the accompanying state of severe hæmolytic infection or extreme condition of shock.

The author does an arteriovenous anastomosis by means of the Elsberg modification of the Crile cannula and has found it most satisfactory and comparatively simple over that of the Crile cannula which was used in the pellagra cases mentioned. As an additional step to the usual technique, the author makes a practice of suturing the cut ends of the radial artery. EDWARD L. CORNELL.

BLOOD AND LYMPH VESSELS

Donati, M.: Wounds of Blood-Vessels of the Limb. (Ferite dei vasi sanguigni degli arti.) *Chir. d. organ. d. mov.*, Bologna, 1917, i, 191.

The author reports 46 war injuries of blood-vessels of the limb observed by him in one of the Italian territorial hospitals. Of these, 18 were bullet wounds, 14 grenade injuries, 7 shrapnel and 7 bomb wounds. In 2 cases the vascular injury was a through-and-through perforation; in 23 it was a lateral wound causing some loss in the substance of the vascular wall; in 19 cases there was total laceration or complete section of the vessel. Eighteen of the cases were associated with bone fractures, and 12 with nerve lesions.

The author gives a detailed history with a discussion of each of the 46 cases. Many of the cases are illustrated.

In summing up his experience from the great variety and degree of gravity of these lesions, the author is impressed by the importance of immediate surgical intervention. Definite hæmostasis can then be made with the least danger in the as yet uninfected areas, and non-suspected lesions in important vessels are discovered and repaired. Such rational intervention, also, by widely opening up the track of the wound and finding the exact lesions of the bones and soft parts, will frequently obviate later interventions for secondary hæmorrhage, hæmatomata and aneurisms.

Once a vascular lesion is diagnosed, whatever its nature may be, immediate operation is justified. Delay should be considered only in such special

cases as true aneurisms of small volume, not infected and not involving neighboring nerve-trunks.

Operation in the majority of cases will consist in ligaturing in healthy tissue above and below the injured segment of the vessel with or without excision of the segment itself.

The ideal treatment, viz., repair of the vascular lesion with immediate reconstruction of the vessel lumen, cannot be realized since it calls for special conditions of asepsis, but this can be effected in a secondary operation for arterial or arteriovenous aneurisms.

In particular cases and with suitable conditions, the author recommends the temporary intubation of the injured artery with paraffinated silver tubes, according to Tuffier's technique. This procedure avoids the sudden arrest of the circulation and favors dilatation of the collateral vessels. The author thinks that the success of this method merits its trial in recent injuries of the limb vessels, especially if associated with fractures or multiple wounds, in order to avoid the danger of gangrene.

The author has never used the compressive tampon to secure hæmostasis; nor has he found that this was effective in those cases coming to him in which it had been done. W. A. BRENNAN.

POISONS

Hopkins, J. G., and Parker, J. T.: The Effect of Injections of Hæmolytic Streptococci on Susceptible and Insusceptible Animals. *J. Exp. Med.*, 1918, xxvii, 1.

The observations recorded in this paper were made in the course of a study of streptococcus infection and immunity. In order to study the problem of the immunization of animals against streptococcus infection, it was necessary first to obtain as clear a picture as possible of the course of the infection in untreated animals. It has been noted by other workers, and borne out by the present investigations, that bacteria introduced into the circulation of the living animals quickly disappeared. It was the authors' first task to study this phenomenon and if possible to find some means of explaining it.

They found that with hæmolytic streptococci which were of rather low virulence for rabbits, a sublethal dose completely disappeared from the blood stream within a few hours. When a lethal injection was given, over 90 per cent of the cocci were removed from the circulation within the first few minutes, and subsequent blood cultures reached a minimum in two to three hours, but after four to six hours the number again began to increase. Even with lethal doses, cultures of 1 ccm. of blood showed no colonies after two or three hours, but as a rule streptococci did not completely disappear after such an injection.

As an example of complete removal, a rabbit was injected with 5 ccm. of a heavy suspension of streptococcus 43. Cultures taken immediately showed several thousand organisms per 1 ccm. of blood. After ten minutes, five drops of blood showed only 23, and after thirty minutes, 5; after one hour, two hours, four and one-half hours, eleven and one-half hours, and twenty-six hours, 1, 0, 6, 17 and 118 organisms respectively.

The blood cultures subsequent to those recorded in the experiment were consistently positive until the death of the animal on the fourth day. The prompt and almost invariable removal of organisms artificially introduced into the circulation was difficult to harmonize with the fact that in susceptible animals the organisms again appeared in the blood within four to twelve hours, and were found constantly in the circulation until death, as in cases of spontaneous septicæmia.

The authors advance four hypotheses which they believe might account for this: first, that after a period the blood-sterilizing mechanism became exhausted and permitted bacteria to remain in the circulation; second, that the bacteria after a brief stay within the body became resistant to its defensive powers; third, that the injection of foreign protein stimulated some reaction such as a mobilization of antibodies, or of phagocytes, which would account for the prompt and extensive preliminary removal of the bacteria; fourth, that the bacteria did not multiply in the circulation, but were continually introduced from infected tissues faster than they could be removed.

Then follows a series of experiments to confirm or disprove these various hypotheses. As a result of these experiments the authors draw the following conclusions:

Streptococci injected into the circulation of cats were quickly withdrawn and were found most numerously in the lung, less numerously in the liver and spleen, and in small numbers in the bone-marrow, lymph-nodes, muscle, and kidney.

The streptococci taken up by the lung were killed within five to seven hours, although they remained visible in films for a number of days. In the liver they were killed less rapidly, and in the spleen a few remained viable for a considerable period.

This bactericidal action was demonstrated in pieces of excised lung but not in lung extracts, and was apparently dependent on the action of the living cell.

Streptococci injected into a susceptible animal, the rabbit, were also promptly removed from the circulation, but were distributed in different proportions, the liver and spleen absorbing almost as many as the lung, and the muscles also taking up an appreciable number.

As in the cat, the organisms taken up by the lung and liver of the living rabbit were promptly killed. Those which lodged in the muscles, however, multiplied rapidly.

About the time that the streptococci began to develop in the muscles, four to eight hours after injection, the number in the blood stream began to increase.

The increase in the blood stream was not due to exhaustion of the mechanism of their removal nor had these organisms acquired a resistance sufficient to maintain them in the blood stream of a normal animal. The septicæmia, then, the authors believe to be a probable result of washing out of organisms from the infected tissues.

Attempts to immunize rabbits were unsuccessful, but in certain treated animals the distribution of the organisms among the various organs approached that found in insusceptible animals, i.e., cats.

GEORGE E. BEILBY.

EXPERIMENTAL SURGERY AND SURGICAL ANATOMY

Dederer, C.: Studies in the Transplantation of Whole Organs; Autotransplant of the Left Kidney to the Neck with Right Nephrectomy in the Dog. *J. Am. M. Ass.*, 1918, lxx, 6.

The author gives his observations from experiments on dogs in which the left kidney was transplanted to the neck, with a right nephrectomy later. The conclusions are as follows:

1. It is possible for a dog to remain alive and in good health more than four months after the transplantation of one kidney to the neck, even when the remaining kidney is removed two weeks after the transplantation.

2. After the transplantation of a kidney with its ureter, the ureter may be seen to move when contracting during excretion.

3. The ureter in a renal transplant may have the power to squirt the urine away from the animal by periodic contractions.

4. Phenolsulphonephthalein may return in four minutes from a transplanted kidney.

5. Many branches from the second cervical nerve may, in seventeen days, become intimately incorporated in the perineal tissues of a cervical renal transplant.

6. The quantity of urine from a cervical renal transplant is markedly increased after the removal of the other kidney.

7. The neck is a favorable site for the observation of an experimentally transplanted kidney and its excretion.

C. A. BOWERS.

ROENTGENOLOGY

Shenton, E. W. H.: X-Ray Localization. *Lancet*, Lond., 1918, cxciv, 2.

Where time permits and photography is desirable, the method described by the author has in its favor accuracy, rapidity and simplicity. He has used it since 1915 for all kinds of localization, including minute fragments in the eye. The apparatus needed is two empty plate boxes, a sheet of paper, and a pencil.

On the top and bottom of the two empty plate boxes is placed a plate, film side down in a light proof wrapper. The two plates are thus separated by the two boxes, the films downward, and the whole held together by elastic bands. The measurement from one film surface to the other is taken and holds for all future work as well. A special holder separating the plates 5 or 10 cm. may be used.

The plates with the boxes between are placed over the foreign body. The lowest plate, with film side downward, touches the skin. This position presupposes that the tube is below the table. The first exposure is made with the tube a little to one side of the object, and a second exposure, without moving the plates, is made after moving the tube somewhat to the opposite side. Thus, when the plates are developed, each plate will show two images. Those on the plate touching the skin will be closer than those on the plate separated by the two boxes.

Erect two perpendiculars to the edge of a sheet of paper separated by the measured distance between the two plate films. On one perpendicular mark a point from the edge of the paper equal to the distance between the two images on the first plate. On the other perpendicular, mark a point from the edge of the paper equal to the distance between the two images on the second plate. The distances between the images must be measured from similar points on each. Draw a line to the edge of the paper passing through the points on each perpendicular. The distance between the perpendicular which represents the film touching the skin, and the point where the oblique line reaches the edge of the paper, shows the depth of the object.

C. B. HOLLINGS.

MILITARY SURGERY

NOTE.—Readers are referred to the Table of Contents for other articles dealing with military surgery which appear under the various headings according to our anatomical arrangement.

Hazen, H. H.: Syphilis and the War. *Am. J. Syphilis*, 1918, ii, 144.

Increase of syphilis during war times among soldiers and civilians is an established fact. The method of controlling venereal disease, according to available statistics, has been less successfully developed in the United States than in other large countries. A special committee appointed for developing more successful treatment advises:

1. Complete case records.

2. Early diagnosis, clinical, microscopic and serologic.

3. Calomel treatment of chancre in preference to excision.

4. Salvarsan and mercurial treatment, both strongly pushed. Monthly Wassermann tests to control the dosage.

5. In late cases without serious lesions, mercury and potassium iodide until symptoms subside, preferably until the Wassermann test is negative.

Special prophylactic and hygienic measures are recommended; also examinations of all men before discharge from the army, and compulsory treatment of all cases. Western Australia has enforced stringent laws with success. LISTER TUHOLSKE.

Campbell, J.: The Treatment in the Field of Uncontrollable Hæmorrhage in Gunshot Wound. *Lancet*, Lond., 1918, cxciv, 295.

Open gunshot wounds of the neck involving the large vessels are usually immediately fatal on the battlefield. Even those that do come under the care of the medical officer usually die because of the inadequacy of the customary methods of packing or digital pressure. Conversion of an open bleeding wound into a closed one by skin and fascial suture or by artery forceps stops bleeding by tension from resulting hæmatoma.

A case is cited of a shell fragment tear three-eighths of an inch long in the common carotid and involving half its circumference, in which bleeding was effectually controlled by two Spencer-Wells forceps. C. A. HEDBLOM.

Billot, G.: The First Line Dressing Station and the First Dressing. *N. Y. M. J.*, 1918, cvii, 313.

The objects of the first dressing are control of pain, hæmorrhage and infection. The first dressing acts as an anodyne. All wounds should be treated on the supposition that they are already infected, as a preventive treatment of gangrene and infections. The means of controlling hæmorrhage are the tourniquet, compression, and ligature. Ligature and compression are the better methods to be employed.

For control of infection, alcohol and iodine have not been successful because of the coagulating action on albuminoids. Dakin's solution has proven most satisfactory.

At the first dressing the wound is cleansed with 14 per cent salt solution and a light gauze dressing applied which is impregnated with Dakin's solution; this is covered with a thin layer of non-absorbent cotton. Fresh solution is introduced at two-hour intervals. It is essential that all parts of the wound should be in contact with the solution so that all infected closed cavities should be opened, and that the action of the medicament should be continuous. Antitetanic serum should be a routine measure. I. E. BISHKOW.

Guillot, M., and Wolmant, H.: Closure of War Wounds in the Base Hospitals (Fermeture des fractures de guerre dans les formations de l'arrière). *J. de chir.*, Par., 1918, xiv, 217.

The application of the Carrel method for sterilization and closure of fresh wounds is well known, but its extension to cases of old fractures or those with established fistulæ is less known. The authors have carried out this procedure since September, 1916, and now report on the first 50 cases so treated. One of the greatest advantages of this treatment is that it affords a means of obviating bony fistulæ. This is especially important as 50 per cent of thigh fracture cases, according to the authors, which do not die or are not amputated remain fistulous after twelve months of treatment.

The technique followed by the authors consists in: (a) primary disinfection by the Carrel-Dakin method; (b) operative treatment; (c) sterilization of the area; (d) closure.

In the course of disinfection a rise in the bacteriologic curve indicates the existence of some bacterial focus in the wound. It may be necrotic tendon, aponeurosis, osteitis, sequestrum, debris, etc.; but whatever it is must be removed surgically. The surgical treatment of the flat bones or of the epiphyses of the long bones does not offer any difficulty; but fractures of the long bones do. It is not enough to remove sequestra nor to currette osteitic areas. The authors think it necessary to deal in order with the following: (1) incision; (2) the periostic callus; (3) the sequestra; (4) bone fragments, etc.; (5) the bone extremities.

All the serious complications which the authors have observed after intervention on infected fractures are connected with the persistence of the opening of one or both medullary canals. The operation activates the bacteria and gives them an area in which they can multiply. It is usual to find that an open bone extremity gives rise to an intense reaction if the cavity of the non-obdurated medullary canal has not been largely exposed to irrigation of the antiseptic. When certain precautions are observed, however, osseous non-obturated extremities if opened surgically do not give rise to any reaction.

The authors therefore have certain rules for the treatment of osseous extremities. These are:

1. Obturating medullary plugs should be superficially abraded by the curette so as to assure no communication with the medullary canal, nor any included sequestra. If the surface thus explored is healthy, the obturation will be respected.

2. Medullary canals remaining open should be cleared by the gouge so as to give easy access to irrigating drains.

After sterilization closure does not usually present any difficulties. When it is impossible to close without filling an old bone cavity the authors prefer to use a fat graft, but this must be reserved for cases in which the production of periostic callus is advanced, else there is a likelihood of a pseudarthrosis.

The results of 50 treatments of old fractures since September, 1916, gave 25 closures; 23 cicatrized spontaneously; and 2 after closure have developed a fistula. These fractures included 11 humeral and 6 tibial fractures and the time between injury and beginning of treatment varied from two days to

seven months. For the fractures that have been closed the average time of treatment before closure was 43 days. The average for the most recently treated cases has been 26 days. The authors state that it is possible to treat 70 per cent of the most difficult old fractures after an average duration of treatment lasting 26 days. W. A. BRENNAN.

Martin, W.: Lessons Taught by the War in the Treatment of Gunshot Injuries. *N. Y. M. J.*, 1918, cvii, 315.

The chief consideration is getting a wounded man to a well-equipped hospital in the minimum of time. This, of course, depends upon the enemy's fire, as ambulances are systematically shelled and the wounded can only be moved at nightfall. At Verdun it was twenty-four hours before the wounded reached surgical care.

In this war the type of injury differs from other wars; 80.5 per cent of wounds are caused by artillery projectiles; all wounds are extensively infected and contain foreign bodies. A vital point is the perfection of means of transportation as, with a delay of twenty-four hours, bacteria in a wound might increase to many millions. Therefore there is a need for experienced surgeons as near the line as possible and X-ray apparatus should be as near as possible to the advanced post. EDWARD L. CORNELL.

Burkitt, E. H.: Surgical Notes from the Western Front During the Summer Fighting of 1917. *Med. J. Austral.*, 1918, i, 22.

The author reviews the work of casualty clearing stations during the summer campaign of 1917, and points out the training advantages from the work of their stations. Arrangement has been made for reinforcement by surgical teams consisting of a surgeon, anæsthetist, theater sister, and one or two orderlies, from quiet sectors to those under fire. During an attack, teams worked sixteen hours out of seventy-four. During the first twenty hours of the Messines attack. 2,067 wounded were received and 2,000 evacuated.

Upon arrival at the clearing station, the patients are rapidly sorted, the minor wounds being cared for in dressing tents, those badly shocked going to resuscitating wards, while those needing X-ray are photographed. Notes on findings are either sketched on the surface or put on a card placed in a bag which each patient receives on entering. The amount of effort and time in searching for foreign bodies is left to the surgeon's judgment, but the author feels that failure means anaerobic infection.

Notes of all operations are dictated by the surgeon, and accompany the patients to the base. In the treatment of infected wounds after a preliminary soap and water scrub, the wound area is rubbed with methylated spirits and painted with 3 per cent picric acid. Small wounds are excised; in larger ones, if very foul, a one per cent saturated solution of permanganate of potassium in hydrogen peroxide is used. Following this, every shred of dead or infected material is dissected away, the wound being enlarged if necessary. Long sutures are placed in position but not tied.

The subsequent treatment may be either the Carrel-Dakin, "bipp," or salt pack. The Carrel tubes must be so placed and regulated that every part of the wound is filled with the solution at least every two hours. The "bipp" is carefully spread into every part of the wound, a few layers of gauze are applied over it, the wound is filled with loose gauze saturated with liquid paraffin, and the sutures are loosely tied. Every three days the dressings are re-applied and the sutures tightened.

Compound fractures are splinted in the ambulance and at the casualty station, the infected bone ends cut away, bones put into proper position, and the wound treated as any other infected wound.

Many head wounds are treated under local anæsthetic with an elastic band about the head to control hæmorrhage. Small openings are made if possible, but the author emphasizes the danger of large fractures to the inner table when only slight damage has been done to the outer table. The dura should not be opened unless wounded. Foreign bodies are removed if they can be reached with the finger, and macerated tissue removed. The wound is closed with drainage.

Chest surgery is becoming somewhat less radical. The surface wound is closed, hæmothorax is aspirated and examined; if positive, rib resection is done and Dakin's solution instilled, and fresh specimens examined every two days. Accessible foreign bodies are removed.

The wounded abdomen is thoroughly explored, wounded intestines sutured or anastomosed, soiled areas washed with Dakin's solution; hæmatomata are carefully drained. Of the injured, 47.5 per cent were evacuated.

Especial care is required in knee-joint surgery to avoid sepsis, but foreign bodies are removed, and the wound either closed or given Carrel treatment as required.

In conclusion, the author speaks highly of the anæsthesia, especially recommending warm ether and nitrous oxide and ether.

H. J. VAN DEN BERG.

Borden, R. P.: War Hospitals in the United States. *N. Y. M. J.*, 1918, cvii, 359.

The author makes a plea for the use of present civilian hospital facilities for military purposes wherever possible. The essence of a hospital, its true reason for being, is its administrative department, including operating rooms, laboratories, X-ray rooms, supply rooms, quarters for nurses and physicians, etc. It so happens that these facilities are capable of largely increased use, and that if the bed capacity were enlarged, the use of these departments would be very greatly augmented. Construction could be concentrated on bed capacity. Most hospital apparatus and instruments may be

repeatedly used as long as there are patients who require them.

Although of course the paramount consideration is the physical restoration of our citizen soldiery, nevertheless the present exigency will in time cease and then unnecessary duplication of construction and equipment will result in a tremendous waste. When the period of readjustment comes, the financial situation will be an important factor in the welfare of the citizen.

The product of the medical schools must be finished by education in hospitals, as in such manner only can surgeons be trained. England realizes the mistake of sending embryo doctors without hospital experience into her military hospitals. By sending the returned soldiers to existing hospitals, it is possible for them to be taken care of by the men who were by reason of infirmity or other conditions unable to engage in foreign service, and at the same time allow these men to carry on the work of educating a new supply of physicians. The army requires such a large number of trained nurses that training schools dare not be interfered with, and physicians and leading nurses are necessary for this.

Plans have been considered for reconstruction hospitals, mainly orthopedic. The result would be a number of special hospitals with duplication of buildings, equipment, personnel, etc. Machinery would be costly and the opportunity for its use short, while the same installation in an established hospital could be continued in use for civilian purposes long after the need for military use has disappeared.

The chief objections raised to the use of the civilian hospitals have been that there would be a loss of military discipline and control. The former can be easily overcome by segregating all military patients and continuing all disciplinary measures. The second can be met by having provisions for keeping records, for military inspection, etc.

The author would establish military zones, consisting of one or a group of hospitals. To each zone would be sent military officers and men as needed to take care of the patients. The hospital would have to conform to certain requirements, including compensation, necessary bed space, and construction of additional wards if necessary.

R. B. BETTMAN.

Owen, W. O.: The Proper Organization of the Medical Profession of the Nation at War. *South. M. J.*, 1917, x, 926.

The author outlines a plan for the organization of the medical profession as a whole in order to intelligently select the best men to care for the army in such a manner that the civilian population will not be neglected. In addition he describes the difference between civil and military practice and indicates the relationship of the military medical officer to his men, to his superior officers, and to his co-workers, and ends with a plea for the assumption of medical and surgical superiority of the world by America's medical profession. H. H. FREILICH.

Poate, H. R. G.: Re-Education of the Disabled Soldier. *Med. J. Austral.*, 1918, i, 2.

This article is a review of reconstruction work as done in England and France with suggestions as to the best manner of providing for the disabled soldiers in Australia.

There is a great need for orthopedic centers in the capital cities of each State. All men who can be benefited by treatment as carried out in the French centers of physiotherapy should be transferred to these hospitals and kept until all has been done for them that is humanly possible.

In close association with these hospitals should be a series of workshops where men can attend and learn a trade.

The establishment of centers of surgical equipment for the manufacture and repair of artificial limbs and all orthopedic appliances should be necessary and would provide a training ground for many men.

Special instruction should be provided for advanced pupils where they may be trained for highly skilled or unusual trades.

In order to place a man finally, when competent, to earn an independent living, it should be incumbent upon the authorities to establish an employment bureau, and to keep in touch with both employers and employees.

The medical profession as a body should play its part wholeheartedly, and should insist on being heard in this matter at once, so that no further time may be lost. R. B. COFIELD.

GYNECOLOGY

UTERUS

Russ, W. B., and Wilson, H. T.: Fibrosis Uteri. *Texas St. J. Med.*, 1918, xiii, 346.

The pathologic processes underlying the cases of menorrhagia and metrorrhagia caused by cancer, fibroids, polyps, inflammatory changes in the uterus and adnexa, certain constitutional diseases such as syphilis and tuberculosis, are fairly definite and well understood. But there are cases of menorrhagia and metrorrhagia in which no recognizable anatomic changes or other cause to account for the hæmorrhage can be found.

These cases of fibrosis uteri, so called, are most frequently found in multiparæ about the menopause. They are, however, by no means infrequent in nulliparæ and in women who are far below the climacteric age. A case in a nineteen-year-old girl has been reported by Pool.

Formerly, when it was believed that the increase in the fibrous tissue in the myometrium was the essential factor in causing hæmorrhage, it was thought that the fibrous tissue prevented the uterine muscle from contracting sufficiently to close the veins and sinuses.

Spontaneous cures argue strongly against the theory that the fibrous tissue in the myometrium is the essential factor in the causation of the form of metrorrhagia under discussion. It is reasonable to conceive of a readjustment of the activity of any of the endocrine glands which would re-establish the normal physiology of the pelvic organs. By such a change, any pathologic hæmorrhage from the uterus would be checked.

There is abundant evidence to show that the endocrine glands may be intimately concerned in the disease which causes fibrosis uteri; even more, they may be the primary seat of the trouble. Perverted follicular activity of the ovary and diminished secretion of the thyroid gland seem to be the most probable conditions underlying this disorder. They may act independently or reciprocally.

Until the cause of this condition has been more accurately determined, the ideal treatment cannot be outlined. Local applications and medicinal measures are of no avail. Curettement affords only temporary relief and should not be resorted to except for diagnostic purposes. Extreme care should be taken to ascertain whether or not there is deficient secretion of the thyroid gland. If the signs of hypothyroidism are present, the exhibition of thyroid extract is indicated.

Roentgenization of the ovaries should be employed, for this will control the bleeding in many cases where it is due to disturbed ovarian function.

EDWARD L. CORNELL.

Ward, F. N.: Procidentia in Nulliparous Women; Report of Seven Cases with Surgical Measures Devised for Their Relief. *J. Am. Inst. Homœop.*, 1918, x, 884.

The author defines procidentia in the nullipara as the third degree of uterine prolapse, where the uterus protrudes beyond the vulva with complete eversion of the vaginal walls. It occurs in those who do heavy lifting. Retroversion is the predisposing factor. Three requirements are essential for the correction of this condition:

1. The uterus must be brought to the normal position with the fundus toward the pubes and with the intra-abdominal pressure coming upon its posterior surface.

2. The utero-vesical-vaginal area must be restored to its normal tonicity so as to do away with the cystocele.

3. The perineal body must be brought to its position just beneath the pubic arch.

The first step in the operation is a high amputation of the cervix and a restoration of the relaxed vaginal outlet. The abdomen is opened and relaxed vesico-uterine space plicated by Polk's method. The uterus is fixed to the fascia or in extreme cases may be bisected and sutured to the upper surface of the fascia. If hysterectomy is necessary, as for fibroids, the stump of the cervix is sutured to the muscle and fascia with linen. The author reports eight cases with cure in all.

S. A. CHALFANT.

Worrall, R.: The Technique of Total Hysterectomy for Non-Malignant Conditions. *Am. J. Obst.*, N. Y., 1917, lxxvi, 894.

There is still some difference of opinion as to whether subtotal or total hysterectomy should be done when removal of the uterus is necessary for myoma or other non-malignant conditions.

The author after a preliminary injection of tincture of iodine into the uterine cavity, with sometimes closure of the os with catgut, opens the abdomen in the median line. Each round ligament is held up, clipped and divided. Through the space thus opened up in the anterior layer of each broad ligament the finger is thrust; the vascular arch above containing the ovarian vessels is divided on the uterine side of the ovaries, which are left if healthy.

The peritoneum between the cut round ligament is divided and the bladder dissected down with the scissors. The uterine vessels are clamped below the inner os. The musculature of the cervix is then incised all around penetrating half-way toward the canal; the direction of the cut is then directed downward until the external os is reached, when the circumference of the cut is expanded so as to include all the external os.

The mucosa of the vagina is united to the serosa anteriorly by a figure-of-eight catgut suture; the same is done posteriorly; the two sutures are then used as tractors by which to pull up the field of operation nearer the operator. Sutures on each side close the lateral angles of the opening into the vagina and check oozing. Tying of the two traction sutures closes the central portion of the opening. The artery clamps are replaced by ligatures; a purse-string suture on each side closes up the broad ligament, takes in the stump of the round ligaments and unites these to the rim of the cervix. When tied they secure the ovaries so that their vascular supply is not unfavorably affected.

This operation can be done in from thirty to sixty minutes according to conditions. The author thinks that this method meets all the objections to both total and subtotal hysterectomy as usually performed for non-malignant conditions.

W. A. BRENNAN.

ADNEXAL AND PERIUTERINE CONDITIONS

Waters, C. H.: Hæmorrhage into an Ovarian Cyst Simulating Ectopic Pregnancy. *J. Am. M. Ass.*, 1918, lxx, 295.

The patient, aged 28, a secundipara, was one week overdue with menstruation. She was in good general health and menstruation had been entirely regular and normal previously except for some slight discomfort until the flow was established. The cervix was of normal consistency, the fundus not enlarged; both ovaries were distinctly palpable, the left being slightly enlarged and tender. The adnexa otherwise were negative. Three days later the patient was suffering with severe abdominal pain and flowing profusely. During the night colic-like pains in the lower abdomen occurred, increasing in severity, and accompanied by diarrhœa and a profuse vaginal flow. Large clots of blood and fragments of "tissue" were passed. The patient's temperature was 101 and the pulse rate 90 and of good quality. There was marked tenderness and rigidity on the left side of the lower abdomen, but no mass could be felt and no free fluid was demonstrable. Nausea was present, but no vomiting.

Bimanual examination revealed the same condition of the uterus and cervix as was found several days previously, except that the external os was slightly patulous. On the left side of the pelvis, however, a tender globular and cystic mass the size of a goose egg could be determined. It was but slightly movable and corresponded in position to the ampullary region of the tube or the ovary. There was no bulging of the cul-de-sac.

The tissue passed by the vagina was found to consist of practically a complete triangular cast of the uterine cavity. Microscopically, the cast was shown to be a rather hyperplastic endometrium, but it showed no decidual reaction or the presence of decidual cells.

During the next week the pain became less severe, though persistent, and the flow practically ceased. The temperature varied from normal to 100, while the pulse rate rarely exceeded 90. Loss of appetite and occasional nausea persisted. There was no demonstrable change in the pelvic condition noted previously. As there was no appreciable improvement in the local condition, operation was decided upon.

A transverse incision revealed no free blood in the peritoneal cavity. The uterus was not enlarged; it was in midposition. The left ovary was transformed into a dark, tense cyst the size of a small apple. There was no torsion of its pedicle. The right ovary contained a corpus luteum of normal appearance. Both tubes were normal. Left ovariectomy, Willis' operation for shortening the round ligaments, and appendectomy were followed by dilatation of the cervix and curettage.

Convalescence was uneventful and menstruation since has been entirely painless and otherwise normal.

EDWARD L. CORNELL.

EXTERNAL GENITALIA

Carstens, J. H.: Gall-Bladder Trouble Complicating Disease of the Internal Genitalia. *Am. J. Obst.*, N. Y., 1917, lxxvi, 936.

The author refers to the gradual modern development of gynecology into pelvic and abdominal surgery. The gynecologist must know the abdomen, be able to make a correct diagnosis, and be prepared to treat any abdominal condition surgically.

Many women with pelvic troubles also have gall-bladder disease as well as diseases in other organs of the upper abdomen. No patient with even simple pelvic disease should be operated upon unless a thorough examination has been made of all the abdominal organs. If there is any doubt of the condition, the incision should be made large enough so that the whole abdomen can be explored. In all pelvic operations where gall-bladder disease exists, the latter should be operated upon at the same time, provided that the patient's life is not endangered by prolonging the operation.

W. A. BRENNAN.

MISCELLANEOUS

Boldt, H. J.: The Surgical Treatment of Cancer. *Med. Rec.*, 1918, xciii, 62.

The author has taken up the treatment of cancer from the standpoint of the gynecologist.

A permanent cure is possible in cancer of the uterus only when the cancer is still a local disease and when an opportunity is afforded to operate in the early stages and well away from malignant invasion.

The author uses the vaginal method of hysterectomy if the patient is obese and the disease is still in its incipiency, using the Schauta technique. In corporal cancer the author uses the vaginal method, except where the case is advanced and one might

cause mutilation and soiling of the field with cancer tissue.

If extirpation is done by means of the cautery, the cautery knife should be cold when brought in contact with the tissues and then heated, to prevent bleeding by a too rapid division of the vessels.

If the radical abdominal operation is advisable, the author advises the Wertheim method, i.e., removal of the uterus, adnexa, extensive removal of the parametria, accessible pelvic and iliac glands, and the upper part of the vagina, particularly if the cancer is in the vaginal part of the cervix.

Intrapelvic and intra-abdominal cancer is not so readily diagnosed as uterine cancer. In cancer of the ovary, if the peritoneal covering has not been broken through, the prognosis is good. He advises the early operation of all abdominal and pelvic tumors. Primary cancer of the vagina is usually seen too late to make possible a cure.

The author emphasizes the necessity of keeping all patients under observation for a number of years, in order to operate upon recurrences at the earliest possible moment.

Palliative treatment in the form of galvanocauterization has given the best results, employing a high degree of heat. It must be remembered that some cases are even beyond the stage where cauterization is useful. In some cases X-ray and radium have given relief. C. A. BOWERS.

Longsworth, M. J.: Some Contra-Indications for Certain Gynecological Operations. *Ohio St. M. J.*, 1918, xiv, 90.

In no field of surgery are unnecessary operations performed so frequently as in gynecology. One of the most serious and common mistakes is the performance of abdominal section in the active stage of a pelvic infective process, such as peritonitis, cellulitis, salpingitis and ovaritis. In these laparotomy is contra-indicated. In many cases where vaginal drainage is resorted to, a complete cure results.

Oöphorectomy should not be performed for intractable metritis, endometritis, menorrhagia, dysmenorrhœa or any other condition where it is desirable to establish the menopause. In these cases hysterectomy should be performed, leaving the ovaries unless they are diseased. The ovaries have an important internal secretion concerned with the maintenance of health and the equilibrium of the nervous system; the uterus has no such secretion.

A vast majority of authorities contend that hysterectomy is contra-indicated in small fibroid tumors of the uterus unaccompanied by hæmorrhage or other serious symptoms. The patient, however, should be kept under observation for complications.

Trachelorrhaphy is contra-indicated in cases that are not producing symptoms. It is also contra-indicated in hypertrophied diseased cervices; in these cases amputation of the cervix is the proper operation.

Secondary operation for the repair of the cervix or perineum should not be attempted until six to twelve months after labor. Failure of the primary repair is usually due to infection and the bacteria causing it may remain virulent for many months. An operation performed too soon might be a failure, due to a revival of the infection. In fact, the bacteria may be disseminated and cause death from septicæmia.

The use of the curette is contra-indicated in acute endometritis, gonorrhœal or otherwise, as the danger of the extension upward is increased. Especially is this so in gonorrhœa, which extends along the mucous membranes from the vagina to and through the cervix, along the mucous membrane of the uterus, and thence through the fallopian tubes to the peritoneum and ovaries.

A common mistake is to curette cases of extra-uterine pregnancy in the belief that they are incomplete uterine abortions.

EDWARD L. CORNELL.

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Wynne, H. M. N.: Interstitial Pregnancy. *Bull. Johns Hopkins Hosp.*, 1918, xxix, 29.

Wynne considers ectopic pregnancy in the interstitial portion of the fallopian tube to be of especial interest on account of its infrequency and from the standpoint of diagnosis. He reviews the literature of this interesting and rare condition and discusses the diagnosis, cause, treatment and prognosis. He then reports a case that occurred in the gynecological service of the Johns Hopkins Hospital.

The patient was a white woman, twenty-four years old, married five years, who had had a normal labor and puerperium three years before and had had no miscarriages. Six years before admission she had had an attack of abdominal pain diagnosed as appendicitis, but had not been operated upon for it. The past history was otherwise negative. Her last regular period began August 1, 1914; since that time amenorrhœa had persisted. She considered herself pregnant.

On November 29, 1914, she fell down stairs, and a half-hour later while attending to her household duties she was seized with violent general abdominal pain. The pain continued very severe all the afternoon and four hours later she vomited. She noticed that her abdomen was becoming larger and was very tender. A physician was called and brought her to the hospital with a diagnosis of an acute ruptured appendix. She was admitted to the hospital that night.

Physical examination showed her to be well-nourished and well-developed. She was in great pain. The skin and mucous membranes were extremely pale; the skin was cold and covered with sweat; the pulse 160, small and weak; rectal temperature was 99. The abdomen was distended, tense, very tender, and movable dullness was demonstrable. The diagnosis was ruptured extra-uterine pregnancy.

When the abdomen was opened through a midline incision below the umbilicus a large amount of fluid, blood and fresh clots escaped, estimated at two liters. A nodule measuring 2.5 cm. in diameter was seen in the right uterine cornu, on the posterior surface of which there was a perforation 1 cm. in diameter, through which placental tissue bulged. There was no active bleeding. The attachment of the round ligament was anterior to the gestation sac. A few fine adhesions were found about the right adnexa; the left tube and ovary were normal.

There is a detailed report appended of the gross and microscopical study of the specimen removed, together with several microphotographs.

GEORGE E. BEILBY.

Rongy, A. J.: The Treatment of Ectopic Gestation Based on a Study of 100 Cases, with a Report of 12 Cases of Repeated Ectopic Pregnancies. *Am. J. Obst.*, N. Y., 1918, lxxvii, 86.

The author's report is based on a series of cases of ectopic pregnancy during the past eight years. Previous to 1911 his cases were treated without surgical interference until the patients had recovered from shock; since that time the majority of them have been operated upon as soon as possible after their admission to the hospital. A comparative study of the two series of cases shows very little difference in final results. In both series the morbidity and mortality were about the same, unless it is assumed that some of the patients who were operated upon at once would have died if left without operation. Rongy believes it is not yet possible to state which is the better plan of treatment. On the other hand, as long as it is impossible to foretell how soon hæmorrhage may prove fatal in any given case, he thinks it proper to operate without delay in the greatest number of cases.

An analysis of the cases shows that nearly 90 per cent of them were not recognized until rupture had taken place. In 40 the diagnosis was that of incomplete abortion. Nine of these had been curetted by the family physician once, and two curetted twice. Four patients died, one on the third day from uræmia, two from sepsis, and one did not rally from the shock. In one of the two patients lost through sepsis, an attempt at criminal abortion had been made.

The patients ranged in age from nineteen to forty years; 19 cases between twenty and twenty-five, 27 between twenty-five and thirty, 28 between thirty and thirty-five, 21 between thirty-five and forty, and 4 cases of forty years or older. Seventeen of the patients had never been pregnant, 22 were para-I, 16 para-VII, 2 para-VIII and 1 para-IX. In 1 case the previous pregnancy had been six months earlier; in 12 cases the previous pregnancies had occurred one year before; in 7 cases three years; in 4 cases four years; in 7 cases five years; in 3 cases six years; in 1 case each seven, eight and ten years respectively; in 4 cases twelve years, in 2 cases each thirteen and sixteen years.

The most striking feature of the series is that of these cases repeated ectopic pregnancies formed an unusually large percentage. CAREY CULBERTSON.

McPherson, R.: The Conservative Treatment of Eclampsia. *Am. J. Obst.*, N. Y., 1918, lxxvii, 58.

McPherson claims that the mortality statistics in eclampsia treated by radical methods run as high as 30 per cent for the mother and 50 per cent for the child. He then compares these figures with

those of the Sloane Maternity Hospital report of the last 15,774 cases, where the eclampsia mortality is reduced to 14.5 per cent for the mother and where the treatment has been conservative.

The routine Sloane treatment is then outlined. The eclamptic patient is isolated in a darkened room, given one-quarter of a grain of morphine sulphate, 2 ounces of castor oil following gastric lavage, and a colonic irrigation of 5 gallons of a 5 per cent glucose solution. Phlebotomy is done if the blood-pressure is over 175 systolic until this is reduced to 150. One-quarter of a grain of morphine sulphate is then administered every hour until respirations drop to eight per minute. By the time the convulsions have ceased the patients are in labor and are delivered normally or by easy low forceps.

The series here reported consisted of 55 true convulsive toxæmias. Of these, 53 patients were treated as outlined and of the 53, five mothers did not survive. McPherson strongly urges a return to this conservative attitude on the part of obstetricians of surgical tendencies. He holds that abdominal cæsarean section has absolutely no place in the treatment of convulsive toxæmia of pregnancy except in the cases where the eclampsia is accompanied by a deformed pelvis or some severe disproportion between mother and child.

CAREY CULBERTSON.

Davis, J. E.: Causes of Abortion. *J. Mich. St. M. Soc.*, 1918, xvii, 2.

According to Davis, the causes of abortion may be classified as follows:

1. Criminal provocation, direct or indirect.
2. Maternal, such as constitutional disease, pelvic disorders, affections of the nervous system, etc.
3. Paternal, such as certain constitutional diseases, chief of which is syphilis, and old age.
4. Fœtal, such as death of the fœtus and diseases of the placenta.

It is generally supposed that 50 per cent of abortions are criminally provoked. Titus found 82 per cent of a series of criminal abortions at the Johns Hopkins Clinic were incomplete, and 78 per cent of this same series were infected, streptococcus infections occurring in 34.3 per cent of these cases.

Abortions during the first few weeks of pregnancy are expelled *en bloc*, while after this period expulsion is in two parts. The inefficiency or lack of preparation of the uterine muscle is thought by the author to cause a retention of parts or all of the membranes and placenta. Retention of secundines is much more common after abortion than after full time labor. Whitehead estimated that 90 per cent of all married women have abortions. Bacon says that from 20 to 25 per cent of all pregnancies terminate in abortion.

Under the maternal, paternal and fœtal causes of abortion, syphilis is the most frequent cause. In 657 syphilitic women there were 35 per cent of abortions.

Decidual endometritis is a cause of abortion in 52 per cent of infected and 68 per cent of uninfected cases, while retroposition is a cause in 30 per cent of the cases.

Lacerations of the cervix and pelvic floor account for 14 per cent of all abortions.

Cancer and intra-uterine tumors are frequent causes.

Poisons in the maternal blood from fevers such as smallpox, scarlet fever, typhoid and the like, are frequent causes of abortion, as are affections of the nervous system, as chorea, epilepsy and shock.

Epidemic abortions caused by the bacillus abortus of Bang and streptococci have been reported.

The causes referable to the fœtus include all the many diseases of the placenta, death of the fœtus, and syphilis.

The paternal causes include mainly syphilis, gonorrhœa, albuminuria, lead poisoning, and old age.

In conclusion, the author urges every physician to vividly portray to his patient the consequential pathology of abortion. HARVEY B. MATTHEWS.

Coyle, E. G.: Toxæmias of Pregnancy. *J. Kansas M. Soc.*, 1918, xviii, 63.

Eclampsia occurs about once in 300 cases of pregnancy, according to the author, most frequently during labor, next in pregnancy, and least frequently during the puerperium. It is still a disputed question whether the toxins causing eclampsia are derived from the syncytium of the placenta, or from fœtal metabolism; most opinions lean toward the latter. It is probable that the toxæmia of the first half of pregnancy is due to syncytial growth and is not affected by eliminative treatment, while such treatment favorably affects the toxæmia of the latter half of pregnancy, the symptoms being due to fœtal metabolism and disappearing with the death of the fœtus.

In hydatiform mole, associated with an enormous overgrowth of syncytium, eclampsia is extremely rare. The manifestations are usually those of parenchymatous nephritis, but albuminuria may not appear before one or two eclamptic convulsions take place. Here the albuminuria may be due to the muscular exertion during the convulsion. The author cites three of the reported five cases which illustrate that point. The other cases are typical. He urges careful examination of the urine, especially in the latter part of pregnancy, when proper treatment will abort eclampsia in many cases.

L. R. GOLDSMITH.

Davis, J. E.: Retained Secundines; a Study of Etiological Factors. *Am. J. Obst.*, N. Y., 1918, lxxvii, 192.

The materials for this study were obtained from a review of the literature listed in the entire series of the *Index Medicus* from 1878 to 1917, including available theses, books or other contributions referred to in accompanying bibliographies. In

addition to this a careful pathological study was made of seventy sections obtained from 474 routine gynecological cases, representing a classified part of the total material examined by the Department of Pathology in the University of Michigan.

The author goes into the most recent knowledge of the physiological and microscopical tissue changes during early pregnancy, and then takes up the inherent degenerative changes occurring either in the embryo or maternal parts. Malpositions of the uterus are also considered as a possible factor in the retention of secundines in abortion. The paper opens up widely the entire subject of complete or incomplete abortion and the discussion is chiefly directed towards early placentation and its relation to the corresponding changes in the endometrium.

This leads, in turn, to a consideration of the question of criminal abortion and the influence of syphilis in early pregnancy. The author says:

"During pregnancy there is an immediate and easy gaping of the vessels in the proximity of the embryo for the purposeful 'give and take' of essential products. The perfection of this mechanism and its normal operation is the crux of the entire question of abortion and whether it is complete or incomplete depends upon the nature of the intercepting pathological factors.

"It is to be specifically emphasized that the principles involved, from whatever cause, may be essentially the same in producing the factors which determine improper enzymic production and interaction, or produce abnormal metabolic changes which in turn lead to death of the fœtus and partial expulsion of the secundines." CAREY CULBERTSON.

McIntosh, G. J.: Premature Separation of the Placenta with Concealed Hæmorrhage. *J.-Lancet*, 1918, xxxviii, 14.

McIntosh states that premature separation of the placenta in various degrees is much more common than is generally believed. It occurs oftenest at the beginning of full term labor or in the last ten weeks of pregnancy. The cause may be twofold; either traumatism, or disease of the placenta or decidua. It is probable that the traumatic cases are associated with and exaggerated by pathologic conditions of the uterus or other systemic diseases.

Premature separation of the placenta is accompanied by hæmorrhage, which may become evident or be concealed even up to the time of a fatal termination.

The severity of the symptoms depends upon the amount of hæmorrhage. In traumatic cases the symptoms may not manifest themselves for days. Generally there is pain of varying degree at the placental site, first of a tearing character, later a dull ache, with possibly colic-like intervals. Next come symptoms of acute anæmia, and later shock, with its characteristic manifestations.

If the hæmorrhage is concealed, a dark bloody serum is expressed by the blood-clots and passes out from the uterus. The abdomen is larger than normal, hard, and there is difficulty in outlining the fœtus. The mother feels no fœtal movements, and the fœtal heart sounds can not be heard by auscultation. Labor is usually very slow, and in many cases terminates fatally. If the mother is saved, the child is almost invariably lost. This condition is to be differentiated from rupture of the uterus, extra-uterine pregnancy, as well as placenta prævia; more rarely from other surgical conditions as rupture of another abdominal viscus.

The prognosis depends upon the early treatment. The mortality in complete separation of the placenta is 50 per cent for the mother and 95 per cent for the babies. In incomplete cases it is less. As to treatment, no hard and fast rule can be laid down. Conditions have to be met as they arise with a view to saving the mother, since the chances of a viable child are so very poor. Cæsarean section may be performed when the cervix is tightly closed, if there is not much shock. Reports of two cases are given. L. R. GOLDSMITH.

Labhardt, A.: Dangers and Treatment of Placenta Prævia (Gefahren und Therapie der Placenta praevia). *Cor.-Bl. f. schweiz. Aerzte*, 1917, xlvii, 1329.

The author's statistics cover the period from 1906 to 1915. In 16,596 births he observed 123 cases of placenta prævia. The maternal mortality was 10 per cent; fœtal absolute mortality 62 per cent, and relative mortality 53 per cent.

The chief dangers of placenta prævia arise from liability to hæmorrhage, increased chances of infection, and possibility of gaseous emboli.

The author thinks that since the cæsarean operation in the hands of expert operators reduces the fœtal mortality almost to zero, and since with asepsis assured, the mortality of the operation itself is reduced to zero, this operative method would appear to be the most rational recourse to save the child in the case of placenta prævia. It is vital that there should be no infection when cæsarean section is contemplated; and it should be done in the early states of labor, before the lower portion of the uterus is distended. W. A. BRENNAN.

Norris, C. C., and Landis, H. R. M.: Pregnancy and Pulmonary Tuberculosis; with a Report of 103 Cases. *J. Am. M. Ass.*, 1918, lxx, 362.

The combination of pregnancy and pulmonary tuberculosis is a frequent one. Pulmonary tuberculosis exerts little or no influence against conception. It exerts but little influence on the course of pregnancy and, except in the advanced stages, exerts little or no influence toward causing abortion, miscarriage or premature labor.

About 20 per cent of cases of mild, quiescent pulmonary tuberculosis and 70 per cent of more advanced cases exhibit exacerbations during pregnancy or the puerperium. Marriage is worse for tuberculous women than for tuberculous men, owing to the dangers incident to pregnancy.

Unless the pulmonary lesions have been quiescent for a moderately prolonged period, tuberculous women should not marry. Tuberculous women should not become pregnant unless the disease is in the first stage, and has been quiescent for a minimum period of two years.

It is as yet impossible to determine with certainty which patients will bear the added strain of pregnancy well and which badly. Patients must be individualized. Moderately extensive lesions, recent activity, the development of secondary lesions, especially laryngeal involvement, loss of weight, fever, hæmorrhage, sweats, lack of vigor, and inability to obtain proper treatment are ill omens, whereas the reverse are more favorable.

Prior to the fifth month of pregnancy, the uterus should be emptied if the disease manifests evidence of becoming active, or if the lesions are extensive or laryngeal involvement occurs. Curettage during the first six or eight weeks and, in the latter cases, vaginal hysterectomy, are, as a rule, preferable methods. Interruption of pregnancy does not insure an amelioration of the pulmonary condition, but does definitely improve the prognosis. About 65 to 70 per cent of patients, prior to the fifth month of pregnancy, will be definitely improved by emptying the uterus as soon as acute symptoms arise, provided proper after-treatment is carried out. Late intervention has given less satisfactory results. Sterilization is rarely justifiable.

After the fifth month of pregnancy, it is generally advisable to treat these patients expectantly. Labor should be made as easy as possible. For this end, induction of premature labor two weeks before term is often advisable; rarely, if ever, should they be allowed to go beyond term. At labor, forceps or version is usually indicated.

Infants should not be nursed by tuberculous mothers and should be especially guarded from infection.

Hygiene and dietary treatment should be employed at all times. These patients should be kept under close observation and should be examined by a competent internist at regular and frequent intervals.

In the great majority of cases the tuberculosis precedes the pregnancy. Even in those cases in which the symptoms are first observed during pregnancy, infection has generally occurred prior to conception, and an exacerbation during pregnancy has directed attention to the pulmonary condition.

All pregnant women giving a history at all suggestive of pulmonary tuberculosis should be subjected to a thorough examination by a competent internist at the earliest possible date. Only in this way can the proper treatment be instigated at the time when it is most valuable.

It is doubly important that tuberculous pregnant women shall be given the same care as the non-pregnant person as far as rest, hygiene, diet, etc., are concerned. EDWARD L. CORNELL.

Walsh, J.: Pregnancy in Cases of Tuberculosis of the Lungs. *Am. J. Obst.*, N. Y., 1918, lxxvii, 292.

Walsh has made a study of 38 women in all stages of pulmonary tuberculosis with respect to child-bearing and its influence on their condition. To these patients after recognition of their disease 50 children were born. In 27 the disease was recognized and treated before the first pregnancy; in 11 the disease was first recognized during pregnancy. Out of the first group 2 died, and of the second there were 3 deaths. Of the first group, 25 are apparently as well as before pregnancy, 3 having had three children and 6 two children. The pregnancies occurred one to twelve years after treatment, the average being four years. Of the second group, 2 patients are still under treatment and the remaining 6 in good health after periods of time varying from three months to thirteen years. The treatment referred to in these cases was carried out under sanatorium management.

Walsh's conclusions are;

1. Active cases of tuberculosis should be advised against marriage; quiescent cases especially after treatment and education bear the duties of marriage sufficiently successfully that if they wish to marry they may be allowed to do so.

2. Quiescent cases becoming pregnant, if put through a rigid régime, may be expected to come through the pregnancy with but little, if any, advance of the tuberculosis.

3. Active cases becoming pregnant run definite risk, yet the operations for abortion, especially those associated with sterilization, have a mortality making the continuation of the pregnancy more desirable. CAREY CULBERTSON.

Marvel, E.: Should the Uterus Be Removed When It Becomes Imperative to Interrupt Pregnancy? *Am. J. Obst.*, N. Y., 1918, lxxvii, 186.

Marvel in a short paper propounds the rather novel thesis that hysterectomy should accompany or constitute the method of interruption of pregnancy when this becomes necessary because of maternal complications. His argument is summed up practically in this paragraph:

"Hysterectomy not only promises immediate relief, but it also provides protection against the recurrence of child-bearing. Hysterectomy is performed with less risk to the patient than other surgical methods ordinarily employed to terminate pregnancy. The removal of the uterus renders conception impossible. Hysterectomy can be done easily and quickly, with little loss of blood during the operation, and definitely provides against loss of blood thereafter. Hysterectomy is a definite surgical procedure, and secures a more satisfactory result than other operative measures."

The cessation of menstruation, consequent upon hysterectomy, is advanced as an especially desirable feature in valvular heart lesions and in pulmonary tuberculosis. CAREY CULBERTSON.

LABOR AND ITS COMPLICATIONS

De Gaudino, M. F.: Uterine Crying (Vagido uterino). *Rev. Argent. de obst. y ginec.*, 1917, i, 394.

Intra-uterine fœtal crying was first described by Felipe List in 1650. Bucura collected 50 cases in literature up to 1904. Many authors deny the existence of such a phenomenon because they have never known nor heard of such a case.

The conditions, as gathered from the published cases, under which intra-uterine crying may occur are: (1) rupture of the bag of water; (2) entrance of air into the uterus; (3) excitation of the fœtal body; (4) compression of the cord. The necessary factors for production of intra-uterine fœtal respiration are interruption of the placental circulation and excitation of the skin by sensory stimulus. The first is produced by section or compression of the cord.

Intra-uterine crying is nothing else than the premature presence of extra-uterine conditions. By any interruption or disturbance of the placental circulation the fœtal blood becomes venous and excites the respiratory center, and the air which is in the uterine cavity is inspired. If the child expires the escaping air, a sound is produced when the vocal cords are tense.

All the necessary conditions may be found in labors with extensive manipulations. In the 50 reported cases there were 11 forceps cases, 15 versions, and in all cases some manipulation which permitted air to enter the uterus. Thirty-four of the infants respired immediately after birth; in 10 the condition was not stated; 5 others were asphyxiated but were revived. There was only 1 death.

The author relates one case. This was in twin labor and the intra-uterine crying was distinctly heard after the passage of the first fœtus. The second fœtus was extracted by forceps and was in good condition. W. A. Brennan.

Potter, I. W.: Version, with a Report of 200 Additional Cases Since September, 1916. *Am. J. Obst.*, N. Y., 1918, lxxvii, 215.

The author bases his opinions on his own experience with over 6,000 personally conducted confinements, regardless of textbook methods of practice or procedures advocated by many teachers of obstetrics. These opinions are:

1. Version lessens the shock of labor.
2. It lessens the dangers due to pressure from and on the head of the child.
3. Version should never be undertaken until the os is fully dilated or easily dilatable.
4. The majority of occipitoposterior positions are best treated by version.
5. Version is as readily performed in the primipara as in the multipara.
6. The fœtal mortality of version should not be as great as that of prolonged labor and instrumental delivery.
7. Injuries to the child's head are reduced by a properly performed version.
8. Face presentations are better treated by version.
9. Prolapse of the cord when the cervix is dilated or dilatable, and the cord is still pulsating, is best treated by version.
10. Placenta prævia in multiparæ with cervix dilated or dilatable is best treated by version.
11. A moderately contracted pelvis, when the child is small, is best treated by version.

Carey Culbertson.

Wood, R. L.: Labor Complicated by Dermoid Cyst. *Hosp. Bull. Dept. Public Charities*, N. Y., 1918, i, 90.

The patient was a negress, obstetrically normal, who had borne one child normally. Dilatation was slow; eighteen hours elapsed before the membranes ruptured spontaneously. Forceps in a mid-plane were applied under ethyl chloride, then ether anæsthesia because of the exhaustion of the mother. Delivery was carried out with moderate ease; one suture was placed for a mucous tear.

At the first traction a large body was expelled from the rectum; it was not pedunculated, and no bleeding or symptoms of collapse followed its passage. The laboratory reports showed it to be a true dermoid cyst, containing much cheesy material in which hair was present, and an occasional area of bone formation. It was certain that it was not a secondary impregnation with fœtal death.

Dermoids may exist in the rectum, at the level of the sacral promontory, loosely attached and folded upon themselves. The whole mass was well-nourished, and the surface veins were distended. There were no signs of a pedicle which had undergone torsion. It had a "living" and fresh appearance.

MISCELLANEOUS

Bartholomew, R. A.: Syphilis as a Cause of Stillbirths; Analysis of 48 Stillbirths Occurring in 1,500 Obstetric Cases at the University of Michigan Maternity Hospital. *J. Am. M. Ass.*, 1918, lxx, 289.

There is need for the adoption of a uniform definition of stillbirth and of compulsory reporting of stillbirths, in order that statistics on this important cause of infant mortality may be improved.

Syphilis is the causative factor in at least one-third of the stillbirths from the time of viability to full term, and a Wassermann reaction is strongly indicated in cases in which there have been suggestive clinical symptoms, unexplained abortions, or premature labors with macerated babies.

A combination of mercury and salvarsan is more effective in assuring the birth of a healthy infant than salvarsan alone.

Important confirmative evidence in the diagnosis of syphilis can be obtained from microscopic examination of the placenta, or, in case of stillbirth, from examination of the fœtal liver by the Levaditi method.

More efficient and practical training in obstetrics and safer surroundings for the patient during confinement will prevent some of the stillbirths resulting from other complications of pregnancy and obstetric emergencies. However, there will always remain a considerable number of stillbirths from unavoidable causes. EDWARD L. CORNELL.

Gardiner, J.: Care of the Perineum During the Second and Third Stages of Labor. *Ohio St. M. J.*, 1918, xiv, 83.

A great deal can be done indirectly for the care of the perineum by directing the forces concerned in the expulsion of the child and in the correction of the malpositions. The consensus of opinion may be summed up in the following statements: (1) Avoid a too rapid delivery by allowing the fascia and muscles time to stretch. (2) Allow the head to pass through only in its smallest diameters. (3) Allow favorable delivery of the shoulders.

The greatest point in saving the perineum is to be so master of the situation that delivery of the head will be accomplished between pains. To secure this the patient should be sufficiently anæsthetized to prolong, if necessary, the interval between these pains. The obstetrician must be free from any further responsibilities at this time, other than the delivery of the head and shoulders. The neglect to observe this is the one grievous fault. Undue retention of the head in a powerful levator ani or a rigid perineum may so compress the child's head that tearing of the meningeal vessels may occur.

Luschka states that fibers arise on the descending ramus of the pubis, called the pubococcygeus, and are inserted behind the anus in a tendon in common with the fibers of the other side, sending no fibers to the vagina or rectum and only a few short, unimportant fibers to the perineum. It is represented as horse-shoe shaped, the anterior opening for the passage of the rectum and vagina and urethra.

From the author's dissections of female pelves, he finds there are fibers of the levator ani which arise from the posterior surface of the body of the pubis as well as the descending ramus and that they send fibers to the vagina, perineum and rectum. Approaching the levator ani from below, it is seen to be reinforced by fibers running from before backward, having their origin about the middle of the descending ramus of the pubis and inserted into the anterior lateral portion of the anus. These fibers do not unite in the perineum in front of the anus. The fibers diverging thus from the anus form a "V," whose apex is broad and is filled in by the anterior portion of the sphincter ani. The fibers forming the sides of the "V" are the fibers frequently pointed out as the ones so important to expose and unite in repair of the perineum.

As the largest diameter of the head is passing through the vulvar outlet or end of the canal, the muscles transversus perinæi superficial and deep, the sphincter vagina and the fibers of the above-mentioned "V" of the levator ani are stretched. It is just before this moment that the advisability of performing episiotomy is thought of. This is a very important time for the perineum and it often rests with the obstetrician to turn defeat into victory. EDWARD L. CORNELL.

Sanderson-Wells, T. H.: A Case of Puerperal Septicæmia Successfully Treated with Intravenous Injections of Collosol Argentum. *Lancet*, Lond., 1918, cxciv, 258.

The patient, aged 20, was delivered of a live child by forceps one week previous; the child weighed 8¾ pounds at birth. The delivery was quite easy. There was a moderate-sized perineal tear which was repaired. The perineum became septic and the stitches were removed. When admitted to a hospital a week later her temperature was 104° F., pulse 128, respiration 30. There was a thin sanious discharge from the vagina, a small ulcer over the perineum, and slight abdominal tenderness. She was given a purgative and the bowel washed out. She was placed in the Fowler position for seven hours daily and given hot vaginal douches of lysol; also a mixture containing hexamine, acid sodium phosphate and bromide, and a dose of polyvalent serum, which was continued every day until a vaccine had been made. The next morning her temperature was normal, but in the evening it rose to 105° and she had a rigor.

On the following day she was given an anæsthetic. The perineum and vagina were well swabbed out with iodine, the uterus curetted with a flushing curette and packed with gauze soaked in collosol argentum. Blood taken from the median cephalic vein grew a pure culture of the streptococcus, from which a vaccine was made.

The patient was losing ground, so she was given 20 ccm. of collosol argentum into a vein. This was followed by a profound rigor and a certain amount of collapse, but the next day her general condition was much improved, the temperature had fallen to normal and the pulse in the morning was counted at 80. The temperature rose, however, again at night, but continued at a lower range. The dose of collosol argentum, 20 ccm., was repeated four times at intervals of a couple of days, and was followed on each occasion by a profound rigor. She developed a thrombosis in the external saphenous in the middle of the right calf, and her pulse returned to between 120 and 130.

Her condition again became serious and a blood culture gave a growth of pure streptococcus. A further injection of 20 ccm. of collosol argentum was given, followed, as before, by a severe rigor; the temperature fell and the next day remained at normal. EDWARD L. CORNELL.

Voorhees, J. D.: Can the Frequency of Some Obstetrical Operations Be Diminished? *Am. J. Obst.*, N. Y., 1918, lxxvii, 1.

It is believed by the author that many uncertain obstetrical operations can be avoided by ordinary

measures during pregnancy and labor and he proceeds to elucidate this belief in a somewhat reminiscent paper covering his experiences of the past twenty years. After reviewing former obstetrical methods and ideas, of historical value only, he produces statistics covering his work of recent years that are of definite interest. Thus he notes a decrease in eclampsia at the Sloane Hospital during recent years. From Jan. 1, 1901 to Dec. 31, 1905, there occurred 113 cases in 7,145 deliveries, 1.5 per cent. From Jan. 1, 1911 to Dec. 31, 1915, but 74 cases occurred in 9,224 deliveries, 0.8 per cent.

He favors turning breech presentations by external manipulations before labor and believes that he has so converted 75 per cent of his breech cases. Brow, face, and persisting occipitoposterior positions are likewise righted without waiting for labor to intervene.

He attempts to prevent large babies by dieting the mother and by early induction of labor if the child appears to be overgrowing.

The indication for the use of pituitrin has been narrowed down in Voorhees' experience to simple inertia without obstruction. There are four cardinal conditions before employing it: (1) the cervix must be completely dilated and effaced; (2) the membranes must be ruptured; (3) the presentation must be normal; (4) there must be a proper relation between the fœtal head and the maternal pelvis throughout.

The author prefers nitrous oxide gas or gas with oxygen as his analgesic in labor but finds even this method far from being a perfect anæsthetic. Two drawbacks to its use are: (1) the frequent great difficulty in controlling the advance of the head over the perineum, requiring a change to chloroform or ether; (2) an increased tendency to postpartum hæmorrhage.

He appears to be enthusiastic over induction of labor and finds it preferable to have a primipara delivered a week or two ahead of time. Castor oil and quinine, failing which the de Ribes bag, constitute a method of procedure.

From 1901 to 1905 labor was induced 284 times in 7,145 cases, 3.9 per cent; from 1911 to 1915 in 9,224 cases, 302 labors were induced, 3.3 per cent. During the first period low forceps were employed 558 times, 7 per cent; during the second period, 380 times, 4 per cent. Medium forceps operations increased from 176 to 449, or 2 per cent to 4.5 per cent. High forceps operations likewise increased from 81 to 138, or 2 per cent to 4.5 per cent. Versions diminished from 299 or 4 per cent to 272, or 3 per cent. Craniotomies diminished from 33 to 18, or 0.3 per cent to 0.2 per cent. The last symphysiotomy was performed in 1902, the last pubiotomy in 1908.

From 1901 to 1905 cæsarean section was done 38 times, 0.53 per cent; from 1911 to 1915 there were 133 cases, 67 primary, 70 secondary, or 1.65 per cent.

Voorhees' conclusions are that high forceps operations are diminishing in frequency, that elective versions, symphysiotomies and pubiotomies are more or less obsolete and that craniotomies are performed as a last resort on dead, injured or nonviable babies. Induction of labor and cæsarean sections are frequent in recent years and are safe and sane operations under recognized conditions, disregarding the radicalism of men who perform abdominal section merely as an easy way out of any obstetrical difficulty.

The author's views are, on the whole, optimistic, in contradistinction to those writers who bewail obstetrics as it is practiced in general. While acknowledging that there is too much indifference, ignorance, and bungling work among the rank and file of the medical profession in the practice of obstetrics, he formulates the four changes which are bringing about great progress. These are:

1. Women appreciate that pregnancy and labor are often far from physiological processes and seek advice early.

2. Medical students and practitioners, even midwives, are better trained and know more frequently what to do in an emergency. They also know when they have reached the limit of their knowledge and resources and when to call in skilled assistance.

3. More women are delivered in hospitals, where every weapon is at hand to combat any expected or unexpected complication.

4. More physicians specialize in obstetrics.

CAREY CULBERTSON.

GENITO-URINARY SURGERY

KIDNEY AND URETER

Schmidt, L. E.: Focal Infection of the Genito-Urinary Tract. *Chicago M. Recorder*, 1918, xl, 55.

The author traces many cases of chronic persistent metastatic infections to old genito-urinary disease. He believes that the gonococcus does not remain longer than two years in a viable state in the genito-urinary tract. But the ravages of the gonococcus leave a good soil in which other micro-organisms thrive which are indigenous to that tract. Schmidt lays stress on the seminal vesicles and prostate as harboring latent chronic infection and believes that generally when the prostate is infected, the vesicles are also.

The author emphasizes the fact that no genito-urinary disease should be considered cured by the urologist as long as pus can be found in the urethra or its adnexa. He believes this tract is too often overlooked as a source of infections by the general profession, and thinks that the urologist should more often be taken into consideration in the study of cases in which a hidden focus of infection may be found. A. C. STOKES.

Green, R. E.: Tumors of the Kidneys. *J. Iowa St. M. Soc.*, 1918, viii, 43.

According to Green, renal tumors are encountered about one to five times in a thousand cases. They are usually unilateral and are most frequently found before the tenth or after the fortieth years. Diagnosis is based on the symptoms of hæmaturia, pain, and tumor. Of these three signs he considers hæmaturia by far the most important.

He reports the following case:

A woman thirty-seven years old, a school teacher and unmarried, entered the hospital because of general weakness. She gave a history of severe attacks of hæmaturia over a period of two years. Blood was found in her urine. There was some backache and some general so-called "rheumatic pains." There had been no great loss of weight. There was no cachexia. The physical examination did not reveal any gross abnormality. Acid-fast organisms were found in the urine of the first examination, but repeated examinations of catheterized specimens failed to show others. The right kidney was movable, easily palpable, and not enlarged. The left kidney could not at this time be palpated.

After a lapse of several weeks, she returned again, complaining of more severe pains, and tender areas were discovered on the shaft of the right humerus, and near the head of the left femur. Radiographs of these areas showed the presence of bone tumors. She also complained of some blurring in vision of the left eye, and the opthalmoscopic examination disclosed a pathological condition of the retina, but nothing more. A radiograph revealed at this time an enlarged left kidney which could now be palpated with difficulty. Later there was metastasis in the flat bones.

Due to the findings of hæmaturia, with bony and probably retinal metastasis, a diagnosis of renal tumor, probably hypernephroma, was made. The patient lived four months longer, but no autopsy was obtained. H. W. E. WALTHER.

Menetrier, P.: Lithiasis and Kidney Cancer (Lithiase et cancer de rein). *Bull. Acad. de méd.*, Par., 1918, lxxix, 65.

The author reports the case of a woman forty-nine years old with chronic disease of the right kidney lasting four or five years, and terminating in a large tumor in the flank and cachexia with fever, complicated in the final stage with severe pulmonary disturbances which caused the patient's death. Autopsy showed that the symptoms were the consequence of a cancer of the right kidney originating from a calculous pyonephrosis with metastases to the lungs and liver.

The author thinks that the case shows that the cancer originated from a chronically inflamed pelvic mucous membrane. There is a causal relationship between the pyelitis which accompanies stones and cancer, and the author concludes in this case that the cancer developed from the chronic pyelitis. W. A. BRENNAN.

Braasch, W. F.: Lithiasis with Bilateral Renal Involvement. *Boston M. & S. J.*, 1918, clxxviii, 292.

Braasch discusses the whole question of lithiasis with bilateral renal involvement, based on a study of some ninety cases of this sort. Of these, sixty-two had been operated upon for bilateral nephrolithiasis with no immediate mortality. In the Mayo Clinic, 12.3 per cent of the cases of renal stone operated upon between January 1, 1910, and October 1, 1917, were bilateral.

Many of these cases complained of pain only on one side; some had no pain at all. The painful kidney was usually the better of the two. In a number of cases the low function of the kidneys was considered to be a warning against operative interference, unless operation was made imperative by reason of pain, hæmorrhage or toxic absorption. Braasch observed that frequently the renal function improved after removal of the stone.

Estimation of the relative value of the two kidneys is based upon the radiograph, cystoscopic examination and the phthalein test applied to the

kidneys separately. The kidney with acute complications should be operated upon first; without acute complications the kidney with the better function should be operated upon first; occasionally simultaneous bilateral operation is advisable.

Stone recurred in 20 per cent of the bilateral cases, as against 10 per cent of unilateral cases. Braasch considers also what to do in case of pyelonephritis, pyonephrosis, hydronephrosis, or tumor in the opposite kidney, stone in a single kidney, stone in a horseshoe or fused kidney. His conclusions are logical and based on good evidence. G. G. SMITH.

Thompson, A. R.: Hæmaturia; a Clinical Lecture. *Guy's Hosp. Gaz.*, 1917, xxxi, 450.

The author presents three interesting cases of hæmaturia and lays down some rules for guidance.

1. Hæmaturia is not a disease, but a symptom, indicating in a large number of cases grave disease of the urinary apparatus.

2. Hæmaturia is not a common symptom of vesical calculus.

3. Hæmaturia should be investigated with a cystoscope during an attack of hæmorrhage; the origin of the blood can thus be seen and localized.

4. Hæmaturia is rarely fatal in itself. Its danger lies in the disease which causes it.

The first case was a man 52 years old, who was admitted to the hospital with a history of pain in passing water and hæmaturia of several months' duration.

Examination showed extreme anæmia, persistent hæmorrhage, and the absence of any localizing renal signs favored the theory that it might be a growth of the bladder. Roentgenogram and X-ray examination gave negative results.

Cystoscopy located blood coming away from the left ureter; this caused suspicion of a new-growth in the kidney. As the patient was very anæmic, the author decided to operate on the left kidney to discover the trouble.

Incision disclosed an extraordinarily mobile kidney with some evidence of formation of new fibrous tissue around it. The ureter was perfectly healthy. The kidney was next incised, but nothing was found except the mobility of the kidney to account for the bleeding.

Fixation of the kidney relieved the patient of hæmaturia, and the urine is quite clear.

All the cases of movable kidney in males that the author has operated upon have had hæmaturia.

The second patient, aged 63, gave a history of various attacks of hæmaturia during the past three years; in the last hæmorrhage his urethra became blocked with a blood-clot and retention was caused. The bleeding lasted about two days, and left the patient very debilitated. He had lost about ten pounds in weight during the past year. Cystoscopy disclosed a papilloma on the left side of the bladder above the ureter.

The author discusses the cystoscopic appearances of simple growth. In cystoscopic examinations, if a shadow is seen, then it is known that the growth has a pedicle, and it can be recognized as a simple growth, not malignant. A malignant growth is sessile, necrotic, and white. A simple growth has the color of normal mucous membrane, bears a multitude of finger-like processes, and casts a shadow.

Growths of the bladder, either simple or malignant, are causes of hæmaturia.

Another case is referred to by way of comparison with the first. It is that of a woman aged twenty. She was admitted on account of pain over the left kidney. When quite young, attacks occurred at fortnightly intervals, but for the past few years the attacks occurred at irregular intervals, commencing more often at night, and usually lasting forty-eight hours; they were invariably accompanied with severe retching and loss of appetite.

Examination showed the cardiac, vascular, respiratory and alimentary systems normal except that she was at the time under dental treatment. Incidentally, the author advises that great attention be paid to the teeth when dealing with urinary diseases. The urine showed blood corpuscles and several epithelial cells. X-ray examination was negative and no macroscopic blood or pus appeared in the urine. Cystoscopy was done and the left ureter catheterized for a distance of 5 cm. The author made an exploratory incision and found a small, hydronephrotic, extremely movable kidney. The kidney and ureter were incised and a tube placed in the kidney wound, down to the bladder; no obstruction was found. There was a great deal of fibrous tissue formation around the kidney and the upper part of the ureter, and on division of the fibrous tissue bands the dilated pelvis almost at once resumed its normal appearance.

This case shows that one may find a very extensive lesion in the kidney following upon a movable kidney with no or only microscopical evidence of hæmaturia in the female, yet in the male there may be slight changes in the kidney and a good deal of hæmaturia. The reason is that in women movable kidney is a chronic condition, whereas in the male it is due to a sudden injury; in other words, movable kidney in the male is a dislocation.

The next case is introduced to show the value of cystoscopic examination.

A male patient was admitted to the hospital with a fracture of the pelvis in the region of the obturator foramen. The patient was in a state of collapse; blood appeared in the urine. An irrigating cystoscope was introduced and the bladder washed out through it; the bladder was found absolutely intact. To locate the hæmaturia, an endoscope was passed into the urethra and found in the region of the compressor urethra muscle a great deal of contusion in the mucous membrane of the urethra with blood oozing from the surface. There was sufficient evidence therefore that the injury was not in the bladder but was in the urethra. If an injury occurs to the posterior part of the urethra, blood may gravitate back into the bladder and hæmaturia may result.

In concluding, the author gives a table of the likely causes of hæmaturia, excluding the medical causes, such as acute nephritis:

1. Growth of the bladder, either single or malignant.
2. Cystitis.
3. Enlarged prostate.
4. Injuries to the bladder and posterior part of the urethra.
5. Calculus anywhere in the urinary tract.
6. Growths of the kidney.
7. Tuberculous disease of the kidney.

Surgical causes of hæmorrhage should be operated upon without delay to save the patient's life.

Palliative treatment may be used in cystitis if it will stop the cause of bleeding.

THEO DROZDOWITZ.

Moes, M. J.: Non-Tuberculous Infections of the Kidney. *J. Iowa St. M. Soc.*, 1918, viii, 41.

Recent studies show that the bacteria most commonly responsible for these infections are: the bacillus coli, the streptococcus, staphylococcus, bacillus typhosus, and paratyphoid bacillus.

The routes by which pathogenic bacteria invade the kidney are three: (1) the urinary tract, called an ascending infection, the common route of secondary infections; (2) the blood stream, usually referred to as hæmatogenous; this is usually a primary infection; and (3) contiguity, as by direct transmission from the colon to the kidney, or by way of the lymphatics.

Moes believes that in the ascending or urogenous types, the important factors are: (1) urinary stasis from whatever cause, in any part of the urinary tract; (2) abnormally patent ureteral orifices, such as permit a backing up or back-flow from the bladder; and (3) the presence of pathologic microorganisms.

He urges that as soon as pus or blood is found in a urine, the source should be diligently searched for until definitely determined. It frequently will require cystoscopic examination, ureteral catheterization and X-ray to determine this. If pus is found in the urine, it must be definitely determined whether it has its origin within the urinary tract, and if it has, it should be traced through the bladder and ureter up to the kidney.

The author then discusses hydronephrosis and pyonephrosis and states that many factors have to be determined in studying these conditions: (1) the site and degree of obstruction; (2) the nature of the obstruction, whether due to impacted stone or compression from without; (3) the amount of function possessed by the affected kidney; and (4) the presence or absence of any lesion of the other kidney.

In speaking of nephrolithiasis Moes considers the following factors as entering into its etiology: (1) the finding of many of the urinary solids in saturated solution; (2) the influence of local irritation; (3) the presence of foreign bodies such as bacteria with infection, or of degenerated epithelium.

In treating infections of the kidney the author believes in alternately rendering the reaction of the urine acid, then alkaline. He administers urotropin when the urine is acid. H. W. E. WALTHER.

Kretschmer, H. L.: Tuberculosis of the Kidney; Presentation of Three Cases. *Surg. Clin. Chicago*, 1918, i, 1139.

Renal tuberculosis, although usually primary in the genito-urinary tract, is secondary to some other focus in the body. Clinically the primary focus may not always be found, but a careful necropsy reveals a healed pulmonary or glandular focus; more often, however, the primary focus is clinically apparent.

Renal tuberculosis is found to be a disease of adult life, more frequently operative in women than men, due, no doubt, to earlier diagnosis in this sex; it is primarily unilateral, the right side being somewhat more commonly infected than the left.

Clinical, experimental and pathological evidence supports the hæmatogenous route of renal infection, which in turn becomes the primary cause of most instances of vesical tuberculosis.

The symptoms are conveniently divided into those referable to (a) kidney, (b) bladder, and (c) changes in the urine. Palpation of an enlarged kidney is often of value, as is also the demonstration of tenderness of this organ; however, these findings in the absence of signs or symptoms of more direct diagnostic importance are often misleading as the healthy kidney may be the palpable and tender one, due to compensatory changes. Colic is present at times, due either to passage of primary or secondary calculi or incrustations of necrotic tissue.

Frequency of urination is often the first symptom and nocturnal frequency is peculiarly characteristic. This condition later is associated with incontinence of urine. The frequency is associated with great urgency and pain either over the bladder or along the urethra. The bladder is especially intolerant to the most bland irrigating fluids under slight pressure and seems to be specifically intolerant to silver nitrate. In these hypersensitive bladders suprapubic tenderness may be readily elicited.

Ordinarily the cystoscopic picture is that of any other cystitis unless ulceration with tubercle formation in its periphery is present. Tubercle formation is confined usually to the region of the urethral orifice supplying the infectious material; however, important exceptions to this condition are sometimes found.

By far the most important finding is that of tubercle bacilli in the urethral catheterized specimen of urine, and this is the one finding that clinches the diagnosis. The organism may be demonstrated in about 90 per cent of the cases.

Pus in the urine is almost a constant finding but the amount is very variable from time to time, while hæmaturia, though not always present, especially early, is commonly produced by this infection

and may be microscopic or so profuse as to obscure the other symptoms of renal tuberculosis.

Three cases are reported in detail, giving a complete clinical history, physical findings, cystoscopic findings, ureteral catheterization findings as regards ureteral obstruction and cultures, leucocyte counts, examination for tubercle bacilli of each urine, as well as complete phensulphonephthalein tests of the function of each kidney, the time of appearance of the dye and the total output in one hour being considered.

Blood and radiographic findings are given. The indications in each instance are clearly defined by summarizing the evidence.

One of these patients illustrates very well the occasional inadequacy of the phenolsulphonephthalein test for kidney function in renal surgical conditions especially. The right kidney secretes 2.3 per cent and the left but 1.6 per cent of phenolsulphonephthalein in one hour; the left kidney contains tubercle bacilli and the right contains none. Upon a second examination without instrumentation of any kind, the total output is 40 per cent in one hour. What appeared to be a very inefficient function is proven to be efficient. This finding occurs at times, due, no doubt, to instrumentation, especially ureteral catheterization, and is coincident with lack of urinary secretion. A second functional test, as was performed in this instance, usually suffices. On the other hand, a polyuria is occasionally produced by instrumentation.

Kretschmer divides the ureter by means of a Paquelin cautery, the operative field being completely covered to prevent possible contamination. The pathologic condition of the ureter serves as a guide to where the ureter is to be severed. If it is thick-walled, with a small lumen, it is a safe procedure to resect as much as can easily be exposed; however, if the walls are thick with a dilated lumen, as complete a ureterectomy as possible should be performed.

In the usual case its section at the brim of the pelvis suffices. A few inches more or less ordinarily can not reasonably have much influence upon the future septic condition of the bladder or the formation of persistent sinuses.

The perirenal fat is often the seat of tuberculous infection in renal tuberculosis even when it looks and feels perfectly normal macroscopically. Tubercules are constantly demonstrated in such tissue, therefore Kretschmer isolates by multiple ligation as much of this fat as can conveniently be delivered and removes it, thus presumably reducing the tendency toward sinus formation to a considerable degree. Should the perirenal fat be indurated and thick, this part of the operative technique is dispensed with. HARRY CULVER.

Furniss, H. D.: Renal and Ureteral Conditions in Women. *Am. J. Surg.*, 1917, xxxi, 257.

The author enumerates the various pathologic conditions of the kidney and ureter to which women are particularly disposed. Movable and floating kidney are in his opinion not to be operated upon unless causing Dietl's crises, gastro-intestinal disturbances or pyelitis. He warns against operating upon these cases in the presence of general enteroptoses.

Stricture of the ureter likewise occurs with much greater frequency in women; also injury due to operative interference in the pelvis.

Furniss further discusses the choice of procedure in these cases. J. S. EISENSTAEDT.

David, V. C.: Ascending Urinary Infections; an Experimental Study. *Surg., Gynec. & Obst.*, 1918, xxvi, 159.

David briefly reviews the literature dealing with the anatomical, clinical and experimental observations on the routes by which the kidney or its pelvis may become infected and concludes that the recent work leans strongly to the view of ascent of infection by way of the lymphatics of the ureter. Some of the reported work loses value because of lack of proper controls. The bacteriology of the normal urine of the animals should be known, as well as a thorough microscopic picture of the urinary tract at postmortem and the bacteriology of the blood. Among 39 dogs the control ureter showed no evidence of cellular infiltration in 14, while 10 had isolated round cell infiltrations in the submucosa and 5 others had this condition well marked. The last mentioned had normal bladder urines.

David used dogs exclusively in his experiments and colon bacillus as the experimental microorganism. Urine cultures were made in all instances before experimentation and dogs having septic urines were excluded. All dogs had a section of the right ureter removed for microscopic study as a control and right hydronephrosis was established by ligation of the right ureteral stump.

David has attempted to determine in this experimental work carried out by careful aseptic surgical technique and equally careful bacteriological and pathological analyses:

1. The reaction of the bladder, under varying conditions of traumatism and obstruction, to the colon bacillus. He found that in unobstructed bladders into which colon bacilli had been injected that 9 bladders contained the organisms after intervals of three to thirty-two days and one was sterile after thirty-four days, while the left ureter and kidney pelvis contained bacillus coli only 3 times, and the right hydronephrosis was sterile in all but one instance.

There was no evidence of involvement of the muscularis and submucosa of these bladders by inflammatory exudate.

The bladders previously traumatized with turpentine showed œdema and polymorphonuclear infiltration of the submucosa and in one instance the peri-ureteral lymphatics showed evidence of polymorphonuclear infiltration which decreased in amount as the ureter ascended and caused a

similar exudate in the kidney which contained the micro-organisms. The majority of these bladders, however, contained non-infected urine in bladder and pelvis and yet showed peri-ureteral exudate, hence such infiltration is not synonymous with infection of the urinary stream.

In bladders partially obstructed by ligature, there was evidence of urinary retention and in 5 dogs all channels of infection of the left pelvis are excluded except ascent through the lumen of the ureter.

2. The involvement of the upper urinary tract from these acutely infected bladders. It is concluded that acute high grade cystitis is not commonly accompanied by extension of the infection to the upper urinary tract.

3. The probable routes by which this extension takes place. It is possible in an unobstructed bladder to infect the upper urinary tract by direct extension o the infection from the bladder through the lumen of the ureter. Cystitis in partially obstructed bladders is very frequently accompanied by the presence of the infection organism in the ureter and pelvis of the kidney, and this extension may take place by the lumen of the ureter or by direct involvement of the ureter by inflammation, by contiguity, or possibly by way of peri-ureteral lymphatics and infection of the subpelvic tissue; although evidence shows that most of these ascending infections are through the lumen of the ureter. HARRY CULVER.

Wise, F.: Acanthosis Nigricans Following Decapsulation of the Kidneys. *J. Cutan. Dis.*, 1918, xxxvi, 35.

The infrequency of acanthosis nigricans and the exceptional circumstance attending its provocation in the present case led Wise to report it.

The condition occurred one year after the decapsulation of the kidneys. The patient's skin had assumed a yellowish-brown tinge, increasing slowly but progressively, until the entire skin, excepting that of the face and hands, shared in the process.

Wise assumes one of the following possibilities: that the operative procedure had resulted in changes in the circulation, affecting the functioning of the abdominal or adrenal sympathetic, or of the adrenal gland itself; or that adhesions had formed, interfering with the normal functioning of the various tissues which they may implicate; or that exudates or proliferated fibrous tissues were exerting pressure on intra-abdominal structures which had in some unknown manner played an important rôle.

LOUIS GROSS.

Rappleye, W. C.: A Study of the Kidney Function in Senility. *Boston M. & S. J.*, 1918, clxxviii, 191.

This study was an inquiry into the functional conditions of the kidneys in late life, designed in part as an assistance in the interpretation of post-mortem findings. A group of 41 patients was studied, in which group the ages ranged from seventy to eighty-eight years. None of the patients had shown any fever, dyspnœa, œdema or other signs within a period which could in any way be considered as influencing the findings in this study. The hæmoglobin of all the patients ranged between 75 and 100 per cent. The blood cytology was essentially normal. A great majority of the patients studied were active, not only working about the wards, but most of them had been engaged in manual labor or in the industrial rooms.

The patients studied were free from gross evidences of renal insufficiency or other compromising conditions such as fever, œdema, dyspnœa, marked anæmia, etc., and most of them were active workers. Under the conditions of diet and hospital routine, the upper normal value of blood urea nitrogen was considered as 15 to 16 mg. per 100 ccm., the blood being drawn before breakfast, twelve to fourteen hours after the preceding meal.

Fifty per cent of the cases studied showed a moderate degree of retention, using the blood urea nitrogen figures as a criterion.

Fifty per cent of the cases showed a systolic blood-pressure of 160 mm. or over; a higher percentage showed a diastolic pressure of 85 to 90 mm. or over. The blood-pressure readings were not considered to be related to either the blood urea nitrogen or to the rate of elimination of phenolsulphonephthalein.

In 27 cases in which the elimination of phenolsulphonephthalein was determined, 13 showed a value of 40 per cent or lower; 9 of these were 35 per cent or lower. A low value of elimination of the dye was associated for the most part with an elevated blood urea nitrogen. A good excretion was related for the most part with a relatively low blood urea nitrogen.

Twenty-five per cent of the cases showed albumin in the urine. There were no cases of glycosuria or hæmaturia. Practically all of the cases showed casts, which is a customary observation.

Sixty-six per cent of the cases showed either an elevated blood urea nitrogen or a depressed value of phenolsulphonephthalein elimination, i.e., 40 per cent or lower. If the findings of only a few casts in the urine be disregarded, and the blood-pressure also be disregarded, in the group of patients studied, about 70 or 75 per cent showed easily demonstrable evidences of kidney insufficiency.

The author notes that in this group there were several cases showing a relatively low blood urea nitrogen and a good renal function, but which had a considerable elevation of blood-pressure, the so-called cases of "essential" hypertension.

GEORGE E. BEILBY.

Christian, H. A.: Tests for the Measurement of Renal Efficiency in Relation to Prognosis in Nephritis. *Penn. M. J.*, 1918, xxi, 233.

In the patient with probable nephritis there are three important questions, i.e., diagnosis, prognosis, and treatment. The author deals only with prognosis.

A correct idea of prognosis is often made from general examination, but numerous errors have been made. Recent work in methods of quantitating renal function furnish data on which to base judgment as to prognosis, and have given better insight into nephritis. The importance of considering the patient as a whole cannot be emphasized too strongly.

Such extrarenal factors as severe anæmia or cardiac decompensation influence renal function profoundly. Under such conditions renal function tests may indicate advanced nephritis and yet the kidney itself is structurally sound. Prognosis here depends on the type and severity of anæmia or the character of the cardiac lesion, and renal function may be an unimportant factor. If renal function is depressed, one must determine by thorough examination whether it comes from a pathological kidney or from extrarenal disturbance before drawing conclusions. If the extrarenal disturbances get better or worse, renal function probably will change but prognosis depends more on the character of the extrarenal disturbance than on the renal function. Improvement of renal function accompanying improvement of extrarenal conditions is an indication of a structurally sound kidney.

If renal function is poor in the absence of serious disturbance in other organs, the probability of improvement in renal function is slight except in acute nephritis. In chronic nephritis prognosis can be determined from renal function with greater success than in extensive extrarenal disturbances.

Low renal function does not justify a diagnosis of nephritis. Extrarenal factors must be excluded or given their proportionate value. Used in this way, the tests help greatly in the diagnosis of nephritis.

When nephritis is present, the tests measure renal activity, and when there are no extrarenal factors, prognosis in chronic nephritis based on tests for renal function shows relatively few mistakes where renal function is quite low.

When renal function is fairly good, the chance of prognostic errors is greater. Repetition of tests at intervals gives some idea of the progress of the renal lesion and is of importance in prognosis.

There are two quite distinct groups of nephritics; in one the lesion progresses at a steady rate, rapidly or slowly; in the other progression seems to be by sudden exacerbations. This last group, even with repeated tests, cannot warrant predictions with safety and a more guarded prognosis must be given than in the former type.

In hospital practice the author makes use of four tests: (1) phenolsulphonephthalein elimination; (2) determination of the blood urea and the rate of urea excretion; (3) determination of specific gravity, sodium chloride and nitrogen content of the urine collected in two-hour portions during the day with special diet. At night one ten-hour specimen is collected and analyzed. Comparison of the day twelve-hour amount with the night twelve-hour amount is of value. (4) The amount of diuresis produced by such a diuretic as theophylline. The phthalein test is made soon after admission if the patient is not incontinent or in coma. If incontinent or in coma, blood urea is determined. When blood urea is not increased considerably, the kidney can be excluded as a cause of coma or other serious symptoms and prognosis depends on existing extrarenal disturbances. If it is increased markedly, prognosis is grave. When the phthalein test can be satisfactorily made, it serves to group the nephritics preliminarily into mild, medium, and severe. In mild cases phthalein elimination is normal or slightly depressed. In them blood urea is normal or almost normal unless the patient is on a high proteid diet. The Ambard coefficient in such cases is often normal.

In these mild cases the two-hour test is particularly useful. The patient is put on a standardized diet for two days and on the third day the special meals and the urinary collections of the two-hour test are made. During the day blood and urine are taken for the Ambard coefficient or the McLean index.

If phthalein excretion is 35 to 45 per cent, moderated renal disturbance is present due to intrarenal or extrarenal lesions. In such cases the two-hour test is of little value. The determination of Ambard's coefficient or McLean's index is more helpful.

In mild cases with cardiac disturbances and œdema, if promptly improved by digitalis, renal function is good and prognosis should be based on the cardiac condition. If œdema is marked, in combination with digitalis, a diuretic such as theophylline produces prompt diuresis and renal function is good; if not, renal function is poor and prognosis proportionately worse.

If phthalein elimination is below 35 per cent, renal function is poor and in patients without cardiac decompensation this indicates usually severe renal lesions. The drop in phthalein excretion down to zero indicates an ever increasingly bad prognosis. Ambard's coefficient usually parallels phthalein excretion. After phthalein excretion becomes low, determinations of blood urea are of value for as they continue to rise they indicate a nearer approach to uræmia.

Many patients with chronic nephritis have arterial hypertension or arteriosclerosis, or both. They are liable to cerebral hæmorrhage or to angina pectoris.

Such development cannot be predicted from tests of renal function. Likewise death due to cardiac decompensation cannot be predicted from renal function alone, but prognosis should depend on a proper evaluation of renal and cardiac condition.

Renal tests give valuable information as to renal function that helps in treating these cases, and from a consideration of both renal and circulatory conditions, helps in forming a far better idea of prognosis than if there were no measure of renal efficiency. H. G. HAMER.

Alcock, N. G.: Renal Functional Tests and Pyelography in Kidney Diagnosis. *J. Iowa St. M. Soc.*, 1918, viii, 45.

The secretion of water and the phenolsulphonephthalein tests are the only two tests Alcock employs in making functional tests on kidneys. He employs both tests in combination with cystoscopy and ureteral catheterization. In the water test, he forces fluids into the patient and then later notes whether or not either or both kidneys respond to the increased fluid intake and which kidney responds the sooner and to the greater extent.

With the phthalein test, he injects intravenously 1 ccm. of a solution containing 6 mg. of the phthalein; note is made of the time of appearance on either side and the separate specimens are then collected for two fifteen-minute periods. Readings are made with a Dunning colorimeter.

Alcock calls attention to the fact that in order to get the most accurate information from the phthalein test, catheters should be left in the ureters long enough to allow the kidneys to adjust themselves. They should be left long enough to note that there is no change in the rate of secretion, that is, until the period of variance has passed. Further, he rightly points out that in very nervous patients, especially women, it is not infrequently noted that after ureteral catheterization hypersecretion of the kidneys will be observed, secreting from two kidneys as much as 24 ounces in an hour. The third factor is the leakage of urine around the catheters. Naturally this leakage will militate against correct phthalein readings.

For pyelography Alcock uses thorium solution, 5 to 10 ccm. of the solution injected into the kidney by means of a syringe. He considers thorium harmless. In doing pyelography he recommends that the catheter be passed by the ureter but not completely to the renal pelvis. The reason is that if the catheter is passed to the pelvis of the kidney, the course of the ureter is more or less determined by the catheter itself. If the ureter makes some unusual bend, the catheter will straighten it out; whereas if the catheter is passed just a short distance up the ureter and then the thorium solution is injected, one gets a shadow of the ureter as it lies in its normal position; also in cases of double pelves such pictures give more detail. H. W. E. WALTHER.

BLADDER, URETHRA, AND PENIS

Hunner, G. L.: A Rare Type of Bladder Ulcer; Further Notes, with a Report of 18 Cases. *J. Am. M. Ass.*, 1918, lxx, 203.

The lesion under discussion is a chronic inflammation of all coats of the bladder wall; by the time these cases are treated the lesion is widespread.

In spite of this widespread lesion, there is remarkably little to be found by cystoscopy, and this is one reason that many of these patients have suffered fifteen years or more and have traveled from clinic to clinic in an effort to find relief.

The crucial test in cystoscopy is the finding of a small abrasion on the mucosa surface which, if not bleeding on discovery, will easily bleed on being touched with an instrument or with a cotton pledget. It is this minute area that gives rise to the urinary findings of a few leucocytes or a few erythrocytes or both when the urine is carefully settled or centrifuged.

Occasionally the distention of the bladder by air as the patient assumes the knee-breast posture causes this area to split and a tiny stream of blood flows to the vertex. In such a case one first notices the blood-tinged urine in the vertex in striking contrast to the perfectly clear urine that has just been drawn by catheter, and by sweeping the speculum around the equator of the bladder, one finds the blood streak and can trace it to the source.

The ulcer is usually found in the vertex or free portion of the bladder, as contrasted with the location of the Fenwick ulcer on the base or fixed portion. Its frequent location on the anterior superior wall is another reason for its having escaped diagnosis, this being a difficult area to examine with either the direct or the indirect methods of cystoscopy. The actual abrasions of the mucosa may be single or multiple.

These ulcers are always small, varying in diameter from 2 to 5 mm., and they appear to be very superficial. The author has never seen them covered with fibrin or with a deposit of urinary salts, nor has he seen them present a picture suggesting malignancy.

The cause of this type of bladder inflammation remains a mystery.

The chief symptom associated with this type of bladder ulcer is pain. Associated with the pain, the other symptoms of cystitis occur in varying degree, namely, frequency day and night, strangury, burning and smarting. The pain is often of the most extreme grade, the patient complaining of a jabbing or stabbing knife-like pain or of a sensation of a jagged, sharp stick in the bladder.

The histologic study of specimens removed at operation shows a fairly uniform picture in all cases. It is a picture of chronic inflammation involving all coats of the bladder and extending over the wide area which at operation shows the œdematous thickening. At the site of the minute ulcer there is loss of the epithelial coat and the underlying mucosa shows the granulation tissue characteristic of an active ulcer. Other sections, taken from what appears to be an ulcer in the gross specimen, show an abrupt ending of the epithelial layer at the edge of an area that is evidently undergoing healing, and here the mucosa layer is less richly supplied with capillaries and is much like the mucosa beneath the epithelial covering, showing a preponderance of connective tissue and infiltration of small round cells and leucocytes.

The mucosa layer in the neighborhood of the ulcer shows an increase in the number and size of the capillaries, varying in the different specimens.

The capillaries are often stuffed with leucocytes, as are many of the lymph spaces.

After an experience with 18 cases, covering a period of seventeen years since treating the first patient, and a period of nine years since seeing the second patient and beginning to make a special study of this type of bladder inflammation, the author believes it safe to say that no form of treatment will suffice in these cases except complete excision of the inflammatory area.

The excision is done through a suprapubic incision. To facilitate the finding and handling of the bladder, it is left full of air if cystoscopy has just been done in the knee-breast posture, or it is distended with sterile fluid just before operation.

If possible, the operation is kept extraperitoneal. This can be accomplished in those cases in which the disease is confined to the vertex and anterior wall. If the disease involves a portion of the bladder covered by peritoneum, it is possible in some cases to separate the involved peritoneum, but more often the attempt at separation results in an opening into the peritoneum or into the bladder.

After excision of the diseased area, the bladder is closed by bringing the edges together with a running lock-stitch suture of twenty-day formaldehyde catgut No. 2, leaving a slight opening in the vertex through which the mushroom retention catheter is carried and sutured to the bladder wall with a No. 2 ten-day catgut. The abdominal wall is closed except for a small opening to carry the rubber catheter and two cigarette drains which are introduced down to the bladder wall.

These cigarette drains are removed at the end of forty-eight hours and daily irrigations of the bladder with a 1:10,000 solution of silver nitrate are carried on through the retention catheter, the strength of the solution being increased as the patient recovers. An ounce or two of the solution is introduced and immediately withdrawn through the catheter until several washings are made. This is best accomplished with the patient on his side.

The retention catheter is withdrawn on the tenth to the fourteenth day, after which the irrigations are given through the urethra daily until the bladder is free from infection. EDWARD L. CORNELL.

Gibb, W. T., and Glassberg, J. A.: A Case of Patent Urachus, with Abscess Complicating an Hypertrophied Prostate. *Hosp. Bull. Dept. Public Charities*, N. Y., 1917, i, 36.

The authors report a case of patent urachus which is especially interesting on account of the patient's age, the duration of the disability, the complete restoration of bladder function, and the closure of the urachal sinus.

The patient, a man of 74, was admitted to the hospital suffering from general abdominal pain and discomfort, complete cessation of urethral urination, and passing all his urine through the umbilicus. These symptoms had set in about three years ago and had gradually increased in intensity, until about a month before the admission of the patient; of late his urethral flow had entirely ceased so that all of his urine passed through the umbilicus. The patient's abdomen was distended, his umbilicus protruded and from it flowed constantly a cloudy fluid with a urinous odor.

A rounded mass, dull on percussion and tender to pressure, was found in the hypogastric region just above the symphysis. On account of the considerably enlarged prostate a small sound could be passed only with difficulty into the bladder. The catheterized urine contained large amounts of pus and a few hyaline casts, and the fluid from the umbilicus showed an even larger admixture of pus than the bladder urine. Methylene blue appeared in the urine twenty minutes after the tablet had been swallowed.

After careful preparatory treatment under which the local and general symptoms had materially improved, suprapubic prostatectomy was performed under general anæsthesia. On dividing the fascia, the rectus and pyramidales muscles a considerable amount of indurated tissue and adhesions were encountered over the bladder, and on going a little deeper, an abscess cavity was entered near the apex of the incision. This was evidently the distended urachus and contained about 60 ccm. of pus having a urinous odor.

This abscess was evacuated and carefully wiped out, and an irregular diverticulum of the peritoneum, which was entered in the lower angle of the wound, was closed by suture. The bladder wall was very thick and adherent to the surrounding structures, and it was impossible to push the peritoneum upward from its anterior surface. Through an incision into the bladder, about 4 cm. long, the enlarged prostate was easily enucleated, and on the twelfth day after the operation the suprapubic tube was removed. The suprapubic wound closed promptly without suppuration. There was no leakage of urine through the umbilicus after the operation, and the patient has been passing his urine normally and at normal intervals since the operation.

The case reported above represents the type of pathological urachus which is of the greatest interest to the genito-urinary surgeon, and which in most instances produces symptoms necessitating operative interference for relief on account of obstruction to the normal bladder outflow, due to either prostatic hypertrophy, impervious urethral stricture, impacted calculus, or obstructing new-growths. By these means such an amount of bladder distention may be produced that the urine, following the line of least resistance, seeks another outlet, enters the patent urachus and produces untoward symptoms calling attention to the condition.

Complete urachal fistula due to hypertrophy of the prostate in the aged is one of the most infrequent types of urachal abnormality, and from this viewpoint alone the report of the authors' case appears to be justifiable. M. KROTOSZYNER.

Huhner, M.: The Diagnosis and Treatment of Pathological Conditions in the Anterior Urethra Through the Urethroscope. *Med. Rec.*, 1917, xcii, 1057.

The author discusses the subject under the following divisions:

1. Description of the instrument.
2. Precautions and contra-indications in the performance of urethroscopy.
3. Preparation of the instruments and of the patient.
4. Appearance of the normal urethra through the urethroscope.
5. Pathological conditions in the anterior urethra seen through the urethroscope.
6. Treatment of pathological conditions through the urethroscope.

He describes in detail the kind of instruments to be used for diagnosis and treatment of urethral lesions, the precautions and contra-indications in the performance of urethroscopy, the preparation of instruments and of patients, solutions for medicating the urethra, the appearance of the normal urethra through the urethroscope, the method of performing anterior urethroscopy, pathological conditions of the anterior urethra as seen through the urethroscope, such as new-growths, cysts in the anterior urethra, polypi, urethral warts, carcinoma of the urethra, and cancer of the urethra.

The other conditions which may be recognized by the urethroscope are granulations and erosions of the urethral mucous membrane, infections and inflammations of the follicles and glands, and infiltration of the submucous tissue causing the different grades of stricture formation. In regard to the latter, he states that these infiltrations are of exceeding importance, as the forerunner of possible stricture. One must not wait until signs of obstruction appear before diagnosing a stricture of the urethra, but must make the diagnosis by the urethroscopic picture, before any signs of obstruction appear, and before it can be appreciated with the sound.

He describes the technique of destroying follicles by chemical means with the urethroscopic knife, by electrolysis and with the high-frequency current.

C. R. O'Crowley

GENITAL ORGANS

Fansler, W. A.: An Unusually Large Sarcoma of the Testicle. *Am. J. Surg.*, 1918, xxxii, 10.

A brief report is given of a patient fifty years old with a tumor of the right testicle. He had been kicked in the testicle by a horse ten years before.

Other than a marked swelling at the time of the trauma and intermittent pain and slight swelling occasionally thereafter there were no symptoms until one year previous to the present examination, when a progressive enlargement developed and continued with increased rapidity until the tumor formed a mass 16 by 17 cm.

The mass was removed as completely as possible, and showed microscopically a rapidly growing sarcoma. Œdema of the leg subsided at once and the mechanical interference of the mass was entirely removed. In spite of graduated doses of X-ray and Coley's fluid, recurrence was rapid.

Harry Culver.

Beal, N. H.: Suprapubic Prostatectomy. *Canad. M. Ass. J.*, 1918, viii, 108.

Thirty-three per cent of all normal males over fifty years of age show enlargement of the prostate, and 40 per cent of these present symptoms. The author makes a plea for the recognition and more universal study of these unfortunates. Relief to the greatest number can only come when surgeons in general take a more active interest in this important branch of their work.

Investigation of the following points is absolutely necessary for good operative results:

1. Kidney function, including the determination of the phenolsulphonephthalein output, the total twenty-four-hour urine specific gravity, the total urea and microscopic findings.
2. Cardiovascular condition, blood and pulse-pressure and estimation of myocardial efficiency by an experienced internist. This group furnished the chief factor in the author's unsuccessful cases. Decompensation is an absolute contra-indication.
3. Infection. Cystitis is best relieved by suprapubic drainage continuing over a period of many weeks. Epididymitis can often be prevented by irrigation with 5 per cent argyrol before each catheterization.
4. Character of the growth. Cancer is more common than was supposed and the results of treatment rather discouraging.

The author prefers the suprapubic method for removal of the prostate in two stages, or in cases with very septic bladders the three-stage operation described by Hadley Williams. He thinks that the removal of the gland is really a shelling out of the enlarged lobes, the posterior portion carrying the ejaculatory ducts being left behind in most properly done operations. This allows the retention of the sex function as effectively as by the perineal route. Hæmorrhage can best be controlled by careful dissection and the Hagner bag. Anæmia consequent on the loss of much blood greatly lowers the patient's resistance to infection and favors complications.

Efficient and experienced nursing is of prime importance in the after-treatment. Good bladder drainage is the best preventive for postoperative complications, such as epididymitis, phlebitis, etc. The prompt recognition of such complications is essential.

H. W. Plaggemeyer.

Bieberbach, W. D.: Gonorrhœa in Young Male Children, and Its Treatment. *Boston M. & S. J.*, 1918, clxxviii, 259.

Gonorrhœa in the male child is a rare disease, at least in boys under twelve years of age, in contrast

to gonorrhœal urethro-vulvo-vaginitis observed in the opposite sex. As etiological factors stand out attempts at intercourse, often suggested by a much older female, and contagion due to foreign bodies or fabrics previously infected being introduced within the urethra. The correct recognition of male infantile gonorrhœa depends upon careful attention to inflammatory conditions of the prepuce or penis, especially in the presence of a long foreskin where a phimosis exists.

When these conditions are complicated by a purulent discharge, it is wise to examine carefully with a view to identifying the nature of the discharge under the microscope. Should an organism be ascertained resembling the gonococcus, then cultivation on artificial media is indispensable toward proving the nature of the infection. By these means only the differential diagnosis between gonorrhœa and simple irritative urethritis is feasible, which in the beginning as a rule, cannot be established clinically.

In this connection the author relates in detail two interesting observations concerning true gonorrhœal infection in four boys, ranging in age between three and six years, in whom the infection was due to the direct and indirect methods of contagion.

In tracing the source of infection, the aid of social workers appears to be indispensable as evident from the history of the first observation, where the chain of evidence was finally conclusively linked by these means.

In the care and treatment of the infected boys, proper prophylactic measures, including instructions to mothers as regards disposal of dressings, prevention of ophthalmia, diet, etc., play an important rôle. The therapeutic measures consist in the internal administration of balsams, i.e., thyresol, etc., which in appropriate doses is borne well by the children, and in local irrigations of the urethral canal by weak silver solutions, protargol or nitrate of silver, 1:8,000 to 1:4,000.

Irrigation is performed by inserting a soft rubber catheter, size 10 French, into the anterior urethra and gently forcing this fluid through by means of a large hand syringe. Following this a clean catheter of the same size is introduced just behind the cut-off muscle, and the same solution is forced through the posterior urethra to the bladder. When the child complains of bladder fullness the catheter is removed and the child is allowed to stand and empty the bladder. By repeating this local treatment every other day with due delicacy, a complete cure of the condition, as evidenced by subsidence of the discharge and appearance of equally clear and sparkling urine portions, may be obtained in about four weeks.

The article proves the importance of the microscopical examination of discharges in children suffering from phimosis in order by these means to clinch the diagnosis at the first visit.

M. Krotoszyner.

MISCELLANEOUS

Edgerton, N. B.: The Diagnosis of Urinary Lithiasis. *J. So. Car. M. Ass.*, 1918, xiv, 38.

In the diagnosis of urinary lithiasis the author insists on the following points:

1. A well taken history and complete physical examination.
2. Good radiographs.
3. Complete study of urinary findings, kidney function, etc.
4. Complete cystoscopic examination, including passage of ureteral catheters and pyelography.

Pain due to stone is present in 70 per cent of cases and may be fixed, radiating, or referred. If the causative factor is in the kidney there is often a dull ache in the lumbar region. The pain of ureteral stone usually follows the surface markings of the course of the ureter, dependent somewhat on the location in the ureter, extending sometimes down into the testicle, leg, and foot of the same side.

Care is necessary in the differential diagnosis, as confusion with a high-lying appendicitis, disease of the gall-bladder, pancreas, perforating gastric ulcer, mesenteric embolism, tubo-ovarian disease and subdiaphragmatic abscess is easy. Stone in the intravesical portion of the ureter often gives rise to dysuria, frequency, meatal pain and occasionally the passage of a few drops of blood. Young has observed seminal and testicular phenomena and chronic rectal symptoms increased at the moment of defecation. Blood is present in the urine except when the stone is not movable and smooth and regular in shape. Infection takes place in about 65 per cent of cases with the presence of pus.

Radiography with the passage of catheters impermeable to the X-rays and injection of thorium will often clear up a questionable diagnosis. Passage of a ureteral stone will sometimes take place after ureteral catheterization due to the resultant strong muscular contractions. H. W. Plaggemeyer.

Schapira, S. W., and Spiegelberg, S. L.: A Preliminary Report of the Study of the Genito-Urinary Tract in 600 Cases of Pulmonary Tuberculosis. *Hosp. Bull. Dept. Public Charities*, N. Y., 1917, i, 92.

The patients under consideration in this series numbered 600; there were 360 males and 240 females, all adults. The cases were not unlike those generally met with in everyday practice, thus explaining the more favorable findings and the considerably smaller percentage of complications in the genito-urinary organs than in those of other observers. The investigations, carried out according to a careful routine, yielded the following results:

Seventy-three of the total amount of patients, or 12 per cent, gave a history of subjective symptoms referable to the genito-urinary tract, i.e., nocturnal and diurnal frequency, tenesmus, etc. Urinalysis revealed in 238 cases albuminuria, 143 cases con-

tained pus-cells, 135 showed casts, in 6 cases hæmaturia was noted, and in 12 cases a specific gravity of 1,010 or less was found. In the presence of acid-fast bacilli in the urine, only catheterized specimens were considered, in order to guard against contamination of the urine with smegma bacilli. In the 73 patients who presented subjective symptoms referable to the genito-urinary tract a cystoscopic examination was made, to which in the cases showing acid-fast bacilli in the catheterized bladder urine was added ureteral catheterization wherever possible.

In 37 of 73 cases presenting subjective urological symptoms, tubercular lesions of the bladder, the trigone, or the ureters were ascertained. In 36 cases, or in nearly 50 per cent, no such lesions could be found on closest scrutiny, thus demonstrating the apparent frequency of symptomatic reflex irritation. On the other hand, tubercular lesions were found in the bladder of 25 patients who had neither subjective symptoms referable to the urogenital tract, nor acid-fast bacilli in the urine.

It was also found that several patients with neither demonstrable lesions in the urogenital tract nor subjective symptoms had tubercle bacilli in the urine, and that patients with local tubercular lesions in the bladder and with urinary symptoms showed no tubercle bacilli in the urine. The latter occurrence is explained by the authors on the basis of intermittent elimination of showers of tubercle bacilli, so that it is quite possible to get specimens of urine between the showers which are free of bacilli, while the former observation gives additional weight to the theory that the kidneys can and actually do excrete tubercle bacilli without themselves becoming infected.

Of 91 guinea-pig inoculations with urines presenting acid-fast bacilli, a positive result was obtained in 23 cases, or in 25 per cent, showing a comparatively very small percentage for the total number of cases studied, i.e., one in 27, as against one in 11 in Cunningham's, and one in 10 in Bernstein's statistics.

Of occasional lesions of tuberculosis among the male patients, 23 had tuberculosis of the prostate, 11 had tubercular vesiculitis and 16 had tubercular epididymitis, and among the 37 cystoscopies in tubercular bladders, 10 tubercular prostates, 4 tubercular epididymes and 3 tubercular vesicles were found.

M. KROTOSZYNER.

SURGERY OF THE EYE AND EAR

EYE

Roy, D.: Late Infection with Enucleation Following an Operation of Iridotasis for Chronic Glaucoma. *Arch. Ophth.*, 1918, xlvii, 42.

A case of infection of a glaucomatous eye requiring enucleation five years after the operation of iridotasis is reported, the author stating that it is the first on record.

The factors contributing to the accident were:

1. The eye showed some slow choroidal changes and was myopic, this evidently progressing and thinning the tunics of the eyeball, causing it to give way at the point of operative incision.

2. No retention suture was used in the conjunctival flap, which is regarded as the serious mistake in this case.

3. Too large an incision was made at the sclerocorneal margin, allowing too large a piece of iris to be pulled into it. S. S. Howe.

Mansilla, G.: Sarcoma of the Right Optic Nerve (Sarcoma del nervis optico derecho). *Siglo. méd.*, Madrid, 1917, lxiv, 979.

A woman of sixty-three years showed exophthalmia, immovability of the right eye, and atrophic optic neuritis. These symptoms suggested a tumor of the orbital fundus. The Wassermann reaction was negative. Evisceration of the cavity was decided on and carried out under chloroform anæsthesia.

On dissecting the lids, the fingers were inserted into the orbital cavity and discovered a rounded mass behind the eye-ball which occupied the orbital fundus and was adherent to the posterior pole. The nerve was sectioned and the eyeball separated and the new-growth and all orbital contents removed. The cavity was then curetted, cauterized and filled with a gauze tampon. The woman recovered completely and there is no sign of recurrence.

The tumor, which was situated in the posterior part of the eyeball and in contact with it and the optic nerve, was microscopically examined and pronounced a fibrosarcoma. Pulido mentions another case in a child two years old.

W. A. Brennan.

Burge, W. E.: The Production of Cataract. *Arch. Ophth.*, 1918, xlvii, 12.

A series of experiments were conducted to determine the essential cause of cataract, the investigator summarizing his work in the following conclusions:

1. Sodium and potassium salts act specifically on the nucleus of the lens, producing nuclear opacity, while calcium salts act on the cortex, producing cortical opacity.

2. The short wave lengths of the spectrum produce such a change in the cells of the lens that the calcium and sodium salts, which are found to be greatly increased in human cataractous lenses, can combine with the protoplasm and precipitate it, thus producing an opacity.

3. That ultraviolet radiation kills living cells by coagulating their protein may be seen by direct observation through the microscope during an intense exposure of unicellular organisms such as paramecia.

4. An opacity of the lens can be produced in fish living in solutions of those salts found to be increased in cataractous lenses, by exposing the eye of the fish to the radiation from a quartz mercury-vapor burner.

5. In looking for the cause of cataract, it would seem that at least two factors should be considered, the one a modification of the protein of the lens by ultraviolet radiation, the other certain inorganic salts by which the modified protein can be precipitated. S. S. Howe.

Kirk, J.: Eye Changes in Trench Nephritis. *Brit. M. J.*, 1918, i, 7.

In the spring of 1917 the author had the opportunity of examining 70 or 80 cases of war nephritis, most of them young, active soldiers twenty to thirty years of age. There was usually severe exposure and strain, and nearly all of the cases were severely acute and seriously ill. Invariably there was marked retinal congestion, with large pulsating veins and no patches of exudation or nerve involvement on admission.

Examination of these cases again about three months after the onset of the illness classified them into three groups, A, B, and C.

Group A included 21 patients, convalescent, with practically no symptoms except slight anæmia and debility, usually with normal urine. In only 4 of these patients were retinal changes present and they were slight, i.e., a few small spots of exudation, slight haziness of the disc, or a little œdema along the course of the veins.

Group B included 20 cases. Albumin was usually present; often dyspnœa and some œdema. Eight cases showed small exudation spots and one showed marked retinal changes.

Group C included 13 cases. The disease was still marked, with general symptoms, severe œdema, much albumin and sometimes blood. Four cases had very definite retinal changes, and four had changes of slighter nature. In none were there signs of any other complicating disease.

In this series, while the spots of exudation were generally in the usual situation, in no case was

seen the typical star-like figure of the chronic cases. Hæmorrhage was not common. The optic disc often showed a definite swelling, and small areas of œdema were noticed along the course of the veins.

In summarizing, the author states that in this disease the retina is very liable to involvement, although gross changes are not evident in the early stages. The pathology is probably an acute congestion, resulting from some specific toxin; the exudation is partly lymphoid and partly cellular and probably clears up in the majority of cases without permanent results. The retinal changes do not affect the prognosis except that the severer the changes, the severer the case in most instances. The condition is probably allied to the acute retinitis of pregnancy, scarlatina, acute uræmia, etc., and should not be confounded with the retinitis of chronic kidney inflammation. V. C. HUNT.

Thompson, H. M.: The Effect of Intestinal Stasis on the Eye, Especially in Iritis. *J. Ophth. & Oto-Laryngol.*, 1917, xi, 343.

The author states that the fact appears to be proven beyond doubt that recurrent iritis has its origin in chronic intestinal stasis. He discusses the theories of intestinal auto-intoxication and intestinal subinfection, and reviews the work of Crile, Lane, and others.

He reports the case of a woman of thirty-two who had suffered for fourteen years from recurrent iritis, rheumatism, and a vertebral polyarthritis. She has remained well for three years and gained in every way since the removal of a chronically ulcerated appendix with concretions and the breaking up of adhesions around the cæcum.

The author believes that when a case has become progressively worse under medical treatment, surgical procedures directed to the intestinal tract are indicated, and that many chronic eye lesions cannot be cured in any other way. S. S. HOWE.

EAR

Babcock, H. L.: Some Observations on the Bárány Tests as Applied to Aviators. *Boston M. & S. J.*, 1917, clxxvii, 840.

Besides detailing the methods of examining the vestibular apparatus as regards nystagmus, the pointing tests and falling, the author has made some observations on the effect of turning on the pulse rate. One hundred cases were thus studied.

The average pulse rate per minute before turning was 78; after turning, 87. The average pulse rate increase per minute was 9. The lowest pulse rate per minute before turning was 58; the highest, 108. The lowest pulse rate per minute after turning was 60; the highest, 124.

In 80 cases the pulse rate increased after turning; in 12 cases there was no change. In 8 cases the pulse was lower after turning. The greatest increase was from 80 to 116; the greatest decrease was from 76 to 66. OTTO M. ROTT.

Steel, G. E.: Mastoiditis. *N. Y. M. J.*, 1918, cvii, 63.

Approaching his subject from the standpoint of the patient and the general practitioner, the author discusses (1) the necessity for operative interference; (2) the danger to life; (3) the danger to hearing; (4) the amount of deformity; (5) the time for healing to occur; (6) the required absence from business.

In deciding the necessity for operative interference, the following terminations should be kept in mind:

1. The case may go on to spontaneous recovery with little or no treatment, and function may be restored to normal, especially in children.

2. It may recover as far as mastoid symptoms are concerned, but the ear may continue to discharge steadily or intermittently, the perforation in the drum membrane may remain open, and the function be progressively impaired.

3. The patient may ultimately recover spontaneously after an unduly prolonged period of aural discharge, the perforation in the membrana tympani healing; but deposits, bands or adhesions may remain which impair function, give rise to a distressing tinnitus, which may finally result in marked deafness.

4. Complications may develop, with or without operation, which may result fatally or jeopardize life.

5. The patient may undergo mastoidectomy and recover with or without impairment of hearing.

Laboratory aids, such as blood count, bacteriological examination and X-rays, are mentioned as of service in reaching a decision.

The prognosis in a mastoidectomy, done where there are no cranial complications and in a patient otherwise healthy, is exceedingly good.

In a mastoidectomy done at the right time before destructive changes occur in the middle ear, the hearing will return to its former condition before the operation.

As to length of time for the healing of the mastoid wound, the average period is six weeks. In an uncomplicated mastoiditis, the patient should remain in the house for ten days after the operation and remain away from business for at least two weeks. OTTO M. ROTT.

Wilson, J. G.: The Effect of High Explosives on the Ear. *N. Y. M. J.*, 1918, cvii, 357.

The cases of deafness due to war conditions could be divided into two classes, one including all cases in which there had been a direct wound of the ear by a missile and the other including those injured by the effects of an explosion without direct wound of the ear. It is the latter class alone which the author considers. These cases had been termed shell shock deafness and there has been a great tendency to associate the condition with hysteria and neurasthenia, but the author advises the avoidance of these terms as confusing.

The effect of a high explosive was a great and sudden compression followed by an equally great

and sudden decompression. This compression and decompression could amount to 10,000 kilograms a square meter. The author referred to the fact that there were certain normal limits to the capacity of the auditory apparatus to withstand pressure changes, and that pressures beyond the normal caused disturbances of hearing such as hyperacusis, hypo-acusis, or total deafness.

The men with symptoms of nerve deafness due to the effects of high explosives could be classified as those with true nerve deafness; those who had had nerve deafness and who retained the fixed idea that they could not hear; and those who were malingering. The first class alone is discussed, and in this class there are three groups of cases.

In the first group, the nerve deafness was associated with damage to the conducting mechanism, such as perforation of the tympanic membrane, hæmorrhage into the middle ear, or infection of the middle ear. The second group comprised those cases in which there was no demonstrable lesion in the conducting mechanism. The third group was composed of those cases in which there was destruction of the cochlea and semicircular canals or their nerves.

The deafness might be partial or total in either of the first two groups, but was always total in the third. The symptoms of all three groups fell within the description of traumatic neuroses and most of the patients exhibited variable and complex symptoms aside from deafness. Such symptoms included the various common manifestations usually associated with neurasthenia or hysteria.

The author pointed out that in those cases where there were no evidences of structural injury, there still might be some microscopic damage to the structures of the internal ear. In this connection the author reported two specimens, secured within six hours after death, in which it was known that the patient had sustained the effects of high explosives and developed nerve deafness. The microscopical examination revealed lesions confined to the cochlear structures, closely resembling the experimental lesions made on animals by pistol shots. The membrana tentoria was found swung up against Reissner's membrane and was attached to it by a serous and cellular exudate. The organ of Corti showed marked swelling of the cells, and microscopic hæmorrhages were found in the internal ear alone with evidences of an acute neuritis of the eighth nerve. No hæmorrhages were found in Corti's organ. With these lesions it was found that the stapes was intact and the vestibule had not been injured.

Concerning the methods employed for improving the hearing, the best results were obtained by stimulating the nerves by means of the voice and tuning forks through resonators. Electricity was harmful. No results were obtained where the internal ear was destroyed.

As a preventive measure the author recommends the Wilson-Michelson hard rubber device which permitted the hearing of all normal sounds, but which also closed tightly in response to loud noises and protected the ear against injury by detonations. This device was smaller than the Malloch-Armstrong protector and did not irritate the canal or cause any discomfort to the wearer. Cotton plugs and wax, or cotton impregnated with petrolatum were condemned. OTTO M. ROTT.

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SURGERY OF THE NOSE, THROAT, AND MOUTH

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AMERICAN COLLEGE OF SURGEONS

CONFERENCE ON HOSPITAL STANDARDIZATION

JOINT SESSION OF INTERNATIONAL, STATE AND PROVINCIAL COMMITTEES ON STANDARDS, HELD IN CHICAGO, OCTOBER 19 AND 20, 1917

HOSPITAL standardization during the last ten years has been much discussed in the medical profession and among hospitals. During this period such a project has steadily won favor; in fact, due chiefly to the American Medical Association and to the American Hospital Association, the need of it is now almost universally conceded. Already hospital standardization has found expression in Pennsylvania and New Jersey. But the first continent-wide plan of action in this field was announced by the Regents of the American College of Surgeons in 1913 soon after the organization of the College and that plan of action is now a reality.

The Journal is pleased in the following pages, first, to review the steps by which the College has entered upon its program of hospital standardization; second, to give in abstract the papers presented at the hospital conference held in Chicago on October 19 and 20.

Although a program of hospital standardization was announced by the College in 1913, the Regents of the College at that time could not take up the project. Necessarily they turned their attention, first, to the organization of strong Credentials Committees in each province of Canada, and in each state of the Union. A second task was to secure a sound financial basis for the College. But when in 1916 these two objects were fairly accomplished, the Regents asked the Fellows of the College to elect committees from their own number in their respective states who were most thoughtful on matters of educational standards.

The purpose of these committees was not only to guide, but also to put into action the standardization project. It was the intent of the Regents as soon as these committees were elected to call them together and with them to act. Delay in this plan, however, was caused by the war and the committees were not called together until October 19 and 20, 1917. On these two days the committees met in Chicago and about 60 leading hospital superintendents also met with them.

At this conference the problem of standardization was approached, first, from the angle of actual hospital data; the number of hospitals, their distribution, their classification, the number of beds, the investment, etc. Together with these data came also some thought as to the relation of these hospitals to the society served by them. The second division of the program had to do with what the profession of medicine wants in hospitals. Under this division were considered efficiency and management, the hospital laboratory, case-records and their value, and the responsibility of the hospital toward medical research and in the training of interns and of nurses. The last two sessions of the program were devoted to the ways and means toward action. In this connection the viewpoint of the American Hospital Association, of the Catholic Hospital Association, and of the medical schools was each presented and discussed.

WHAT THE CONFERENCE DID

The outcome of the conference in general terms was as follows:

First, the idea of organized standardization advanced among those present from a mere intellectual conception into real enthusiasm. Second, the interest in the project was shared by hospital administrators,

whether they came from little hospitals or from great hospitals, as well as by physicians and surgeons. Third, the proper care of the patient was, throughout all of the papers and discussions, held as the test of efficiency in the standardization program. The hospital is for the patient; it is for his convalescence and complete recovery from illness. The right sort of care of the patient, it was emphasized, could be provided in a small hospital as well as in a great hospital. Fourth, time and time again the need of closer coöperation between hospital staffs and hospital trustees was urged, and the need also of strong administrative authority. Fifth, firmness in all procedure and quick action were judged fundamental to successful policy.

Finally, in order to translate the conclusions of the conference into action, a General Hospital Committee composed of 25 members, surgeons, internists, hospital superintendents and laboratory men and other specialists was appointed to meet at an early date in Washington. This Committee is to do two things: First, to revise and complete a questionnaire upon which data concerning hospitals are to be collected; second, to review and to approve a minimum standard on the basis of which hospitals are to be classified. This minimum standard is to include definite requirements on such matters as the keeping of case-records, the hospital laboratory, and the training of interns.

In the closing summary of the conference on October 20, Dr. George W. Crile said in part:

"The first great step toward standardization has been achieved, for those of us who are here have ourselves been standardized. We are a difficult group to standardize, but the thing is accomplished.

"One thing I have learned from this meeting which is more important than anything else is that medical staffs should realize fully that they are public servants; that they are in private practice only in part; and that they owe a duty toward the training of young men in hospitals. They owe a duty to train nurses as well as interns and assistants. It is the duty of medical staffs also to give an insight, to give a spiritual viewpoint to members of their respective boards of trustees in order that the staffs of hospitals and the trustees may work together with all the advantages of strong bonds of coöperation.

"I have listened with great interest particularly to what has been said about small hospitals. So far as I am personally concerned, the standardization that is in our minds here to-day is not the standardization of the great institution. High scientific service in a hospital does not necessitate a large number of beds. It means merely that if a hospital has but one patient and one member of staff, that if the member of staff gives that patient a fair show and a square deal in the way of intelligent treatment, the hospital will meet any standard which we may properly set up. The patient must have the advantage of medical science, the advantage of a laboratory, and the advantage of good nursing.

"I desire to mention a matter that concerns this problem which I learned, much to my advantage, in France. For the first time I spent all of my time each day in a hospital. Heretofore, I have had a great many duties outside of the hospital to take me away from it. In spending my time all day in a hospital I had excellent opportunity to see more closely the things that make for real success. I do not believe that we as surgeons realize how little attention we actually give to our own hospitals. I did not realize it, at least. Now I know that there must be a whole ocean of things going on in my own hospital that I should concern myself about.

"And not only should we concern ourselves about our hospitals, but to a greater extent we should concern ourselves about our trustees. We should interest them in such a fashion that they will come gladly to the meetings and that they will give us their most careful judgments on the intricate problems that arise. We must have, all of us, one set of ideals throughout all departments.

"We are now at the beginning of a tremendous expansion in altruism, and of a keener understanding of our duties toward the community. The success of the whole project lies within ourselves."

During the last session of the conference

Dr. William D. Haggard, Nashville, especially struck home the part which the State Committees on Standards must play in the project. He said in part:

"I make final appeal to you, individually, that when you go back home you have frequent meetings of your committees and that you present this whole matter to your various medical societies, and particularly to the members of your governing boards, and to the people of your communities. Hospital trustees are kindly people, but they do not actually give the same active and intensive interest to the hospital problems with which they are charged that they give to their individual business. The fault lies largely with the profession. The doctors have not educated the trustees to their duties. The very foundation on which we may hope to build success lies in the interest and teamwork which we create among the hospital trustees."

STATEMENT OF SECRETARY GENERAL

Because of illness the Secretary General of the College, Dr. Franklin Martin, was not present at the conference. He sent, however, an introductory statement to the conference in which he recommended the appointment of the General Hospital Committee and made other most helpful suggestions. His statement in part follows:

"There is nothing insurmountable, in my judgment, in the standardization of the hospitals of this continent. It is a matter of organization; of organization that attacks with courageous force the roots of the problem and not its branches and twigs.

"The fundamental elements of this work are: first, the patient; second, the doctor who treats the patient; third, equipment and intelligent administration; fourth, adequate nursing facilities; fifth, diagnostic laboratories in charge of a practical laboratory man. These five fundamentals form the basis of the concrete structure which we are to approach.

"Assembled here today are members of our State and National Committees. We have with us also leading hospital superintendents. You are men of force, of intelligence, and of executive ability; you are quite capable to formulate a plan of minimum efficiency that may be applied to each class of hospitals. This is one of the tasks for which the Committees of the College were elected, and not only *one* of the tasks, but the *paramount* one. With our Director and by ourselves now this plan is to be developed. At the end of one year at least one thousand hospitals should be published in their definite groups as Class "A" hospitals according to the standards of the American College of Surgeons. We have no compulsory power over hospitals that do not enter into the program with us. But we have with us the strong support of some 4,000 Fellows and the force of public opinion because what we want is right.

"Let me say that the standardization of hospitals covering a continent can be accomplished only by firmness and by the untiring exercise of the courage of our convictions. Let me urge also that swiftness of action inspires confidence and defeats opposition."

HOSPITAL CONFERENCE IN ABSTRACT

I. HOSPITALS AS THEY ARE

In the following pages the papers presented at the hospital conference are given in abstract:

DR. JOHN A. HORNSBY, in his article "The Hospital Problem of Today — What is it?," finds that there are in the United States 8,667 institutions for the care of the sick, having a total of 875,877 beds. These are general and special acute disease hospitals. In New York City there is one hospital bed to every 130 of the population; in Ohio, taking the state as a whole, there is one hospital bed to each 250 of the population, while in the state of Texas the proportion is as 1 to 450. The total amount of money invested in hospital buildings and equipment in this country is $1,445,197,500. The per

capita cost for the maintenance of a patient in the hospitals of this country ranges all the way from $1.25 per week up to $7.00. The total annual expenditures for hospital maintenance amounts to $433,917,057.00.

Eleven per cent of the people who were sick enough to be under a doctor's care in four counties in the state of New York, according to a survey, were in the hospitals and about 89 per cent were attended at their own homes.

In the light of pathological, bacteriological and the X-ray aids to diagnosis, 90 per cent of the people are deprived of the best services during sickness.

No hospital can be better than its medical staff, and no medical staff has a right to expect evaluation of its abilities higher than the prima facie evidence at hand in the equipment and in the methods employed in the workshop in which their work is done. We all know institutions, elaborate in architecture, great in size and rich in endowment, that are mere boarding houses for the sick; and we know that in many of these institutions the medical staff is mediocre, without ambition, energy or enterprise. We all likewise know small isolated institutions, far out in the country, small in size, poor in worldly goods and almost without equipment or funds with which equipment may be bought, whose service to the sick is of a high scientific order and in which the sick man, woman or child may have at his need the best that modern medicine offers.

In perhaps 75 per cent of the hospitals in this country, large and small, general and special, the record as it is kept today is practically valueless. In many of the hospitals the scientific auxiliaries to diagnosis are not employed and medical treatment and surgical interference are undertaken after the most cursory bed-side examination. The only part of the medical record of patients in a vast majority of the hospitals is the nursing chart. It is rare indeed that we find a running, continuous medical story of the progress of the case written from day to day in the record. There are spasmodic attempts in this class of hospitals to make and record urinalyses in special cases and an occasional record of other laboratory examinations is found, but it is not routine practice.

The employment of inexperienced and incapable persons in the scientific departments, such as the X-ray, pathology and dietetics, is a thing which should not be tolerated, yet many hospitals are today following this plan. It is certainly dishonest to the community and to the medical profession.

Nearly all hospitals have the old formulae of "special diets." We know, however, that most of these special diets are valueless and that, in the light of studies in metabolism and in the physiology of digestion, they are based upon wrong principles and exploded theories. Yet we find these special diet charts in the serving rooms of nearly all hospitals and in many of these they are exalted into actual fetishes. On the other hand, in some institutions with well-trained dietitians the medical profession fails to avail itself of their services.

It has been the complaint almost throughout this country for a decade that the hospital is a place for the millionaire and for the pauper, but that 90 per cent of the population, people in moderate circumstances who would refuse charity and cannot afford the luxuries of the modern hospital, have been without consideration. Those of us who have been closely in touch with modern hospital practice know that this indictment has largely been true. This class of patients is coming to realize, however, that the hospital is not a hotel with the special function to administer to dainty luxurious appetites for rich and costly foods, but that the plain and simple things agree best with sickness and agree best with most patients.

One of the very greatest deficiencies in our hospital records and, consequently, one of the most important items of hospital and health statistics, is the almost total absence of follow-up work. Surgery is successful only as a permanent cure or as a definite preannounced period of relief. Many patients get well, apparently, and go back to their homes greatly relieved following a surgical operation, only to have the disease recur

after a brief interval of relief. This means that measures must be taken by the hospitals of this country to follow patients back to their homes and to a period of complete cure — or to recurrence — before the record of the patient can be completed and reported for the purposes of literature.

DR. EDWARD MARTIN, in his paper "Relation of the Hospital to Its Community," states that the modern hospital has advanced more rapidly in the past ten years because medical efficiency has advanced more rapidly in that period of time.

Hospitals were founded on a broad charity. There were communal hospitals and city hospitals. The state hospitals were founded with approximate indifference to take care of those who could not care for themselves. Then came the altruistic hospital. There were men who strove to make life less miserable for others by giving freely their dollars and their efforts toward these hospitals. Then came the scientific teaching type of hospital. Medical schools found this type of hospital very vital for teaching purposes. Then followed the purely scientific research hospital, a splendid institution.

When a man graduates from a medical school and has an academic degree, he is only 20 per cent valuable to the community. When he gets through a good hospital he is of real value. He works and is not diverted. There are graduates in hospitals who state that the facilities and equipment of the institutions with which they are connected are poor and inadequate that no one in particular cares how the hospital is conducted. Such hospitals should either raise their standards or should not be tolerated by their communities. Such hospitals do harm.

In Pennsylvania Dr. Baldy succeeded in raising the hospital standard through the Bureau of Medical Education and Licensure. In one week he had accomplished what hospital staffs had been trying to do for five years. Through his influence the hospitals put specialists on their staffs, X-ray men, laboratory men, etc. His chief weapon to force hospitals into line was that unless these hospitals accepted a certain standard, they could not get resident physicians.

In the matter of standardization, what is the very foundation on which a hospital rests? The answer is that the hospital is for the patient. It is for his smooth convalescence and complete recovery. As a means to this end it is most important that hospitals be managed by trained superintendents. The first step is to establish some school for the training of hospital executives. Fundamentally that will be a medical education plus a hospital residenceship, and after that intensive training in hospital management. The time is ripe for it. Another point in the standardization of hospitals is the keeping of a complete set of records which give essential data as to the care of patients and the final results of treatment.

II. WHAT THE PROFESSION OF MEDICINE WANTS IN HOSPITALS

DR. JOHN YOUNG BROWN on "Hospital Organization and Efficiency" says that hospitals are established for the purpose of rendering better service to the sick than they can obtain in their homes. The most successful hospital is the one which is conducted primarily from the ideal standpoint of the best professional service to its patients, and *not from the business standpoint of hospital economics and financial deficit or surplus.*

Many hospital superintendents realize the necessity of being able to control fully the standard of treatment which patients in their institutions should receive. Only a few superintendents are today endowed with sufficient authority in this matter. Unfortunately, there are too few superintendents capable of exercising intelligent and judicious supervision in medical matters.

At the present time the legal restrictions in the various states are not sufficient to guarantee the proper standards of surgical excellence. The hospitals, are in a position to refuse to become a party to other than competent and skillful work in the handling of the unfortunate sick in their charge.

A position on the board of trustees of a hospital is a great public trust. That trust must be observed and realized to a greater extent.

The medical profession should be satisfied only when our hospitals are conducted with the sole idea of what is best for the patient.

Since the laity, by the very nature of things, expects these obligations to be discharged by the hospitals, why should not a properly conducted hospital, fulfilling its every obligation to the patient, make known to the community, through proper channels, its position in the matter of incompetent physicians and surgeons and be rewarded with the increasing gratitude and confidence of its patients?

The minimum of responsibility which the hospital may rightly assume is that which its board of trustees would wish any hospital to assume towards themselves as patients.

Dr. Francis Carter Wood in "The Hospital Laboratory" states that the standardization of hospital laboratories implies the standardization of the profession as well, and that such a reform invariably meets with opposition from the very persons and institutions that need it most. The best laboratory equipment and staff will be of no avail unless cordial support is given to the workers by the clinical staff and unless intelligent use is made of the reports furnished.

The functions of the hospital laboratory may be outlined as follows: First, and most important, to offer to the attending physicians and surgeons such information as will assist them in caring for their patients in the best possible manner; second, to furnish facts which will be of educational value to the physician or surgeon himself, his staff of interns, professional guests, and students; and, third, to advance the arts and sciences of medicine and surgery.

While many hospitals give good service as far as staff and nursing are concerned, but few of the hospital laboratories in this country fulfill all their functions, for reasons which are obvious: first, lack of money for laboratory salaries and equipment; second, lack of control over patients and difficulty in obtaining autopsies; third, scarcity of well-trained men to study the patients when the latter are available.

The following headings are discussed:

1. What is the irreducible minimum of laboratory equipment, both in apparatus and in personnel, without which the patients of the hospital will receive inferior treatment?
2. What is the mean or average equipment for a good hospital of two hundred beds?
3. What is the ideal?

Under the third heading the author states that the ideal institution should have facilities for observation and investigation of patients in collaboration with the clinical staff which must be possible to the workers of the laboratory if the highest achievement is to be reached. The pathologist himself should be a full time man, of high research ability and, if possible, with some teaching connections which will, without absorbing too much of his time, keep him in touch with students and members of a university staff. He should rank in the hospital as an attending physician in order that he may have sufficient authority over the interns and nurses to obtain such specimens as the study of a case may require. He should have ward privileges so that he may have a bed or two for metabolism work. One of his assistants should be an assistant attending physician to the hospital, the other an assistant attending surgeon, and both should be on one of the regular services so that they have full access to the patients in the wards. This brings the wards to the laboratory and the laboratory to the wards; it trains two men who will be ready after four or five years to step into responsible clinical positions with far better knowledge of medicine and surgery than the average hospital graduate. The opportunity of seeing the patients stimulates interest in the laboratory work, and the patients are helped because the laboratory work is better done.

The secret of successful research is not in money or buildings. No great work is ever done in research except by a great man, and the American method of assuming that a large income will produce valuable scientific returns is not wholly warranted.

Dr. E. A. Codman in his article "The Value of Case Records in Hospitals" gives the following:

Every time treatment, whether operative, mechanical, or medicinal, is given, an experiment is performed. It is no less an experiment because it is made on the human subject. In every experimental science, records are made of each trial, giving all necessary details and especially noting the result. Singularly enough, in these human experiments it is not usual to make special effort to see that the results are systematically recorded, even though the details of the operations or treatments may be written down in the clinical records. If we were using dogs in the numbers that we are human beings, there would be a great cry raised against our brutality for causing needless suffering. The truth should be recorded even if expediency keeps the records under lock and key.

Case records are made for four purposes: first, for scientific purposes; second, for practical purposes; third, for medicolegal purposes, and, fourth, to form a basis for study to increase the efficiency of the hospital.

It is a singular fact that the last idea is a relatively new one. Heretofore trustees have been content to know that their patients have been treated and cared for.

In hospital organization we may profit by the teachings of the modern science of efficiency engineering.

The important facts under the eight headings which follow should be known about each case in all hospitals:

1. A permanent address of some relative or friend who would forward mail a year or more later.

2. The symptoms or condition for which relief was sought.

3. The diagnosis accepted as a basis for treatment by the person responsible for or giving the treatment.

4. The name of the person who took the responsibility of treating the patient or the names of those to whom he delegated important steps in the treatment.

5. The important points in the method of treatment, whether operative or otherwise.

6. The complications which resulted from, during or after treatment.

7. The final diagnoses at discharge, authoritatively O. K.d for index filing.

8. The result, when time has elapsed for this to be determined, or a brief annual statement of the patient's condition.

Dr. Allen B. Kanavel in writing of "The Educational Responsibility of the Hospital to the Profession and to the Community" has this to say:

The educational functions of a hospital may be grouped in four divisions, first, as to interns; second, as to the staff; third, as to the profession at large; and, fourth, as to the community.

A hospital should teach its interns, first, medical knowledge; second, ideals; third, thoroughness; fourth, imagination. It is the duty of the staff and hospital authorities to cultivate all of these.

In this material age care should be exercised to choose a staff wisely. Hospital trustees should realize that the possession of a large practice is not necessarily the badge of efficiency in the profession and that if they choose their staff on the basis of income to the hospital, they may soon awake to a realization that the standard has been so lowered that it has lost the confidence of the profession and of the community. With the general diffusion of medical knowledge, the laity is rapidly learning to demand thorough training of the physician.

Every hospital staff should demand and every hospital furnish all known equipment for diagnosis and scientific work. As a protection to themselves, hospital trustees should urge postmortems for all patients dying in the hospital, and the staffs should have the scientific honesty to support the demand.

All hospitals would be better for some university supervision and would certainly develop a higher function if they acted as the teaching center for their communities. This would raise the standard of the hospital, center professional life about it, and develop the profession as a whole.

The public has unstinted praise for knowledge and in proportion as our profession demonstrates a real scientific spirit, the moral and material support of the community may be expected. The laity must be taught by lectures and demonstrations under proper auspices. To win the confidence of the

public, the staffs and the trustees of the hospitals must have the right ideals in medicine. Efficiency of the one and service divorced from material advantage on the part of the other must be our ideals. Dividends must be sought in scientific knowledge, in the cure of disease, and in the amelioration of human suffering, rather than in dollars and cents. But let no one doubt the latter will follow inevitably in the train of the former.

Miss Annie W. Goodrich in speaking of "The Trained Nurse" says: The most important questions for consideration today are: first, what is the function of the nurse? And, second, what content of education will equip her to fulfill this function?

The nurse is a remedial agent whose services calling her to all classes of society at frequent intervals and in intimate and prolonged association, is thereby afforded an almost unlimited opportunity for health education which is the keynote of preventive medicine.

We are quite familiar with all the arguments relating to the impossibility of including in a three years' course all of the sciences required for a sound educational foundation and all of the specialties a knowledge of which would, of course, be desirable. The scientific foundation should not be left for these three years. Students should not be permitted to enter schools of nursing who have not completed the course in a secondary school or a recognized equivalent. Both in the secondary schools and in the colleges are courses in the sciences which might well be considered necessary to demand for the would-be student in nursing.

The era of the *trained* nurse is drawing to a close. She will appear in the near future only in the history of the rise and fall of the apprentice system; but if history presents a faithful portrait, she will be found there as an outstanding example of the value of a close relation between the student and the practice field. Despite many opinions to the contrary, a proper division of the three years and a careful study and provision of the number of cases per student that will provide a sufficient body of experience in the branches determined to be essential will make possible the inclusion of all the important services in the nurse's experience not, however, to the extent of preparing her for specialization. But the inclusion of these services will necessitate the requirement of courses in certain sciences already obtainable in high schools before admission to the school of nursing, and the elimination of household duties, the required experience in which could also be provided through a pre-vocational course.

What shall be deemed the essential branches must be determined by a study of the needs of the community, not by the branches found in any given institution.

A survey of the hospitals maintaining schools of nursing of any state presents the majority dealing mainly with surgery and with an ever-increasing private patients' service. It also presents a number of special hospitals giving two or three years in their specialty. Because two-thirds of the service of an institution is surgical is no reason two-thirds of the student's time should be given to that service.

The author recommends that an investigation should be conducted of all training schools, with the following result:

a. Exact knowledge of the wide variations in curricula and practical work.

b. Definite knowledge of cost of education and saving to hospitals by utilization of pupil nurses.

c. Practical program for changes in present method of education, including:

1. Separation of school from hospital, graduates of schools having choice of hospitals according to merit at graduation.

2. Relief of nurses from maids' work in hospitals, which would improve the character of the hospital nursing.

3. Teaching of pupils by graduates paid for the purpose.

4. Shortening of hours of labor for nurses in hospitals.

5. Raising the standard of nursing, attracting more students of a better class.

6. Diminishing the number of schools by amalgamating many existing ones.

7. Diminishing cost of instruction by such consolidation.

8. Improving physical condition of nurses.

III. WAYS AND MEANS TOWARD ACTION

MR. ASA S. BACON, on behalf of the American Hospital Association, presented a paper in which he outlined in the form of a questionnaire certain hospital data as the basis for standardization. This questionnaire, revised in the light of the discussion which followed its presentation and later by the General Hospital Committee, will be printed by the College as a separate pamphlet.

FATHER C. J. MOULINIER, "On Behalf of the Catholic Hospital Association," stated:

You are endeavoring to standardize hospitals. But hospitals are only one phase of the whole subject involved. You will never standardize hospitals, unify and systematize them except by unifying and systematizing the art of medicine, the healing art. To systematize, standardize, unify, and make coöperative an art is a rather new thing in life. Art by its very nature is individual. It partakes of personal impulse and thought and imagination, and yet in an art like medicine, the healing art, the art that aims to do for the human race what it most needs — prevent, alleviate, cure disease — is unquestionably something that must be standardized in the sense of being unified, systematized. We can think alike about physics, chemistry, and mechanics because the laws here are fixed and definite; we can think alike in regard to some of the fundamental laws of biology because they are well settled; but to think alike as to how to apply that great complex of laws called the science of medicine to the prevention, alleviation, and cure of disease is a great big task which will, in its final accomplishment, reach away into the distant years.

There will never be an effective systematization, unification or standardization of hospitals until the public begins to think as the doctors think, in broad outlines, and until the public begins to think as the doctors think, the full personnel of hospitals will not think that way effectively. In order to make all think alike, the people must be told clearly and concisely that *so and so* must be done in order to make this small or this great hospital what it should be.

This education must reach into the nursing schools, into the sisterhoods, into the high schools and colleges because, naturally, all of them are interested in this advancing movement and all feel the truth and the force that is back of the truth.

DR. E. P. LYON, "On Behalf of Medical Schools," states that the medical school has four primary interests in hospitals from the standpoint of teaching: (1) for the training of nurses; (2) for the training of undergraduate medical students; (3) for the training of internes; and (4) for the training of graduate students or specialists. Besides these there is the interest of research, which is as much a function of a university as teaching. Finally, there is the interest which the medical school as a quasi public institution and standardizing agency should have in medical practice as a whole.

Hospital standardization like medical school standardization is primarily, even 90 per cent, a problem of the staff.

If the staffs of hospitals accepted seriously their educational responsibilities, the fifth or interne year could be made a universal requirement for the M.D. degree.

The first and fundamental change required before hospitals can be standardized is a recognition on the part of the staff of their educational responsibilities.

The medical school, interested in education and research, cannot look upon the laboratory as accessory and secondary. It must be coördinate with the other departments. It must have equal quarters, equal equipment, equally trained men in charge. The interne as a student (not as a servant) must have access to laboratory facilities. He should do the standard routine laboratory work on his cases all the time.

What should be the relation of the interne to the patients? From the medical school standpoint, the patient is the material the student studies. If you shut up the patient in a private room and tell the intern to keep out, you are turning that intern out of school. Even in private hospitals it is possible to give interns access to all of the cases. The tactful staff man has no difficulty in doing this. Only the self-confessed incompetent will object when he recognizes his teaching

obligation to the interne. The medical school cannot approve an internship for fifth year credit in a hospital where any other condition prevails.

From the standpoint of the medical school, a good autopsy service is indispensable.

The hospital should have an up-to-date library. Every hospital should also have working arrangements with a medical school library or some other great collection by which books can be had on loan.

Hospital records are the basis alike of good teaching, of all research founded on numbers and averages — the statistical method — and finally of the best work for the individual patient. The clinical just as the laboratory scientist must stand or fall on the written evidence of his work.

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Frederick A. Spafford
Gilbert G. Cottam
Robert Douglas Alway
John W. Freeman

TENNESSEE

Rufus E. Fort
John M. Maury
Richard Alexander Barr
Lucius Edward Burch
Edward Coleman Ellett
George Manning Ellis
Duncan Eve
Samuel Rush Miller

TEXAS

James E. Thompson
Bacon Saunders
Frank Cooke Beall
W. Launcelot Brown
Ira Carleton Chase
Howard R. Dudgeon
John Thomas Moore
Arthur Carroll Scott
W. Burton Thorning
Charles Scott Venable

UTAH

Samuel C. Baldwin
J. W. Aird
Frederick Stauffer
Robert S. Joyce
Harry N. Mayo

VERMONT

John B. Wheeler
Alan Davidson
Henry Crain Tinkham
William W. Townsend

VIRGINIA

Stuart McGuire
Southgate Leigh
Robert C. Bryan
Achille Murat Willis
Lomax Gwathmey
Hugh Henry Trout
Stephen H. Watts

WASHINGTON

James B. Eagleson
Henry B. Luhn
George Monroe Horton
Caspar Wistar Sharples
Horace J. Whitacre
Park Weed Willis

WEST VIRGINIA

Frank LeMoyne Hupp
Arthur P. Butt
Robert Jeffrey Reed
John Egerton Cannaday
William Wolfe Golden

WISCONSIN

Gilbert E. Seaman
Curtis A. Evans
F. Gregory Connell
Edward Evans
Reginald Henry Jackson
John Lawrence Yates

WYOMING

Willard C. Foster
Herbert Taylor Harris

DOMINION OF CANADA

ALBERTA

Edgar W. Allin
Frank H. Mewburn
Ludwig S. Mackid

BRITISH COLUMBIA

Alexander S. Monro
O. M. Jones
Herbert W. Riggs

MANITOBA

Jasper Halpenny
W. A. Bigelow
W. Harvey Smith

NEW BRUNSWICK

George C. Van Wart
Walter W. White

NOVA SCOTIA

Henry K. MacDonald
Philip Weatherbe

ONTARIO

Irving H. Cameron
Hadley Williams
A. T. Shillington
D. J. Gibb Wishart
B. P. Watson

PRINCE EDWARD ISLAND

Stephen Rice Jenkins

QUEBEC

James A. Hutchison
Edmond M. von Eberts
W. W. Chipman
Zephyr Rhéaume

AMERICAN COLLEGE OF SURGEONS

HOSPITAL STANDARDIZATION

THE questionnaire of the American College of Surgeons, prepared as the beginning of hospital standardization, is now in possession of the hospitals of the United States and of Canada. The purpose of the questionnaire is to provide information about actual hospital conditions upon which a practical minimum standard may wisely be determined. That minimum standard will then become a sort of measuring stick for the classification of hospitals. In this connection some fundamental matters are here considered:

First, the project of standardization undertaken by the College does not limit itself to surgery, although it is natural to assume a primary interest in surgery on the part of the College. The project is broader than surgery. It deals with the whole sum of things which serve the needs of the patient. It is directed, therefore, not only to surgeons, but also to the medical profession and to the public. It is nothing less than a conquest of efficiency in the care of those who are ill, a conquest of discipline, of team-work, of right, and of honor. It calls for the co-operation of all who desire to see the conquest win.

But the moment we enter upon such a conquest we find that we can never separate our efforts from the temper of the days in which we live. It happens that in these days we are in the midst of fresh analyses of liberty and of freedom. It happens that since the beginning of the war the worth of medical science has taken new hold upon the public. The right to health has become a fundamental of our civilization just as is the right to life. Medical service is no longer conceived of as a luxury chiefly for those able to pay for it. It is a common benefit provided by society for all. These facts bear upon hospital standardization, for hospital standardization means the standardization and unification of the medical profession; it means the standardization of the right to health. The whole problem is vital to society just as the privileges of liberty are vital to it.

Now what does this mean? It means that no faction, clique, sect, or narrow society may rightly presume to standardize hospitals. That work is of universal concern. It means that hospital standardization is the business of the American College of Surgeons, of the American Medical Association, of the American Hospital Association, of the Catholic Hospital Association, of all medical and related societies, of boards of health, and of hospital trustees who are the representatives of the public in the matter. It means that all of the folk of all of these groups must unite with seriousness of purpose and clearness of vision as to what they want. It means that in so far as the American College of Surgeons is concerned in its leadership in this field, it must be not merely a society of surgeons for surgeons; its object must be to make direct for all things which serve the needs of patients. That is exactly the work which the College has set for itself. That is the conception which holds the Fellows of the College together in bonds of loyalty and in bonds of honest service. A motive of this kind today is known as medi-

cal patriotism. On this ground only does the College ask co-operation.

Emphasis of the breadth of view of the College at this time is of great importance. In effect the College says to internists, to specialists, to laboratory workers, to hospital trustees and hospital superintendents as well as to its Fellows:

"Our work is to keep people well, to overcome disease in the swiftest way known to medical science and at as low a cost as most efficient business methods permit. This is work which we willingly accepted. Having accepted it, we must dedicate ourselves to it. We must be sober, industrious, wise, and unselfish; we must unite in a great aim, determine what the work is to do and go to it."

PURPOSE OF QUESTIONNAIRE

To turn, now, to the purpose of the questionnaire: If the College is to classify hospitals from the viewpoint of the patient, then it must obtain some definite measure of the success of hospitals from the patient's angle. It must determine upon a minimum standard of equipment, of organization, and of professional procedure, and with this standard as a gauge proceed to classify hospitals.

But what sort of a standard is to be set up? To answer this question is to explain the policy of the Regents of the College which after much thought and counsel they have adopted. That policy is this: The minimum standard must be high enough to safeguard the interests of the patient and low enough to be at least within the reach of the majority of hospitals whose motives are creditable. The limits of such a standard cannot wisely be determined upon until a thorough analysis of hospital conditions, such as will be provided through the questionnaire, is at hand.

Obviously the standard now attained by some great hospitals with large endowment, research laboratories, and staffs of specialists is out of the reach of many small worthy institutions. At the other extreme is the standard of some hospitals, both large and small, which means in effect that the institutions are merely boarding houses and that they are unworthy of the confidence and support of their respective communities. The College seeks a standard which lies between these extremes. It seeks to define what right conditions are for patients in terms of thoroughness of diagnoses with due laboratory facilities; of the continuity of the service of competent physicians and surgeons responsible for the treatment of patients; of the keeping of accurate case-records with follow-up of results; of cleanliness, etc. In general, failure on the part of the hospital to meet the minimum standard will be due to lack of effort and of organization rather than to lack of financial resources. The questionnaire is the means employed by the College in order that with adequate knowledge of hospital conditions it may define the minimum standard in accordance with the policy just stated.

To this policy another point may be added: Neither at this time nor at any time can the service of a hospital be reduced to something positive, hard, and fast. Such service is a set of dissolving views which forever change both with the advance of medical science and with the changing aspects of our social relations. It is an evolution. The plan is to start with a standard within the grasp at least of the majority of hospitals and then, later, to advance the standard as may seem wise.

WHAT FACTS ARE WANTED?

What facts does the College want from hospitals?

In answering this question the College wishes to emphasize that it seeks no information which may be merely interesting rather than directly useful to its purpose. The College is not inquisitive. It has endeavored to ask only for such facts as hospitals, conceiving themselves broadly as public institutions, are glad to give to responsible and interested parties.

Here follows briefly a review of the questions asked: In the matter of organization and control the College wants to know whether or not the hospital is incorporated.

Under financial data and accounting the figures are desired for the total earnings from the operation of the hospital and for the total operating expenditures of the hospital ex-

clusive of the out-patient department in order that comparable figures may be had of the cost per patient per day in hospitals. Such figures are not of the value usually credited to them because of the different social conditions and costs of commodities in various parts of the country. On the other hand, they do represent at least partial conclusions as to efficient management which are of value for the consideration of every hospital.

Under capacity and scope the classifications of patients *admissable* to hospitals for treatment or care are asked; also the limitations placed upon the admission of patients due to race. The number of patients for the year in free ward beds, in part-pay beds, and in full-pay beds is asked.

Under the hospital staff the following questions are included: Is staff "open" or "closed"? Have doctors other than staff members the privileges of the wards? Of private rooms? Are physicians and surgeons who divide fees permitted to practice in hospital? Have the trustees or governing authority taken action with regard to practice of secret division of fees in hospital?

The questions with regard to the secret division of fees are significant. The evil of the practice is so widely recognized that any emphasis with regard to it seems unnecessary. The practice is prohibited by law in Kansas, Nebraska, Iowa, Minnesota, Wisconsin, Ohio, Alabama, West Virginia, Tennessee, and Colorado. Certainly no hospital has a right to claim the good will or the support of its community if it harbors the buying and selling of patients in its care. From the beginning the College has stood unalterably against the division of fees. It has pointed out that the evils of the practice are, first, incompetent medical and surgical service; second, unnecessary surgical operations; and, third, the lowering of the whole profession into dishonesty. The College includes a secret profit on eyeglasses and appliances in the division of fees. In the final standard for Class A the College will ask each hospital to join with it against the practice. How long would any hospital last in an intelligent community which openly stood for fee-splitting?

In the matter of clinical laboratories a complete outline is desired of the field for which the laboratories are adequately equipped. Special emphasis is placed upon the making of autopsy reports. By general consent today the making of such reports is considered one of the strongest influences to put an end to unnecessary operations. In this connection the College asks the following questions: Number of deaths in hospital in last year? Number of autopsies made during same period? Are complete autopsy reports filed with the respective case-records? Whose duty is it to obtain consent for autopsies? Does the pathologist meet with the staff to review the clinical history in relation to autopsy findings? What arguments are used to obtain consent for autopsies?

The College desires to know the extent to which case-records are kept in each hospital and the extent to which these records are followed up. A significant question here is: Are patients told before leaving hospital that their subsequent medical history will be asked for? Also these questions are asked: Do the case-records as kept by the hospital include a record of the personal history of the patient relevant to the complaint; the diagnosis on which the treatment was based; the laboratory findings; the operation or treatment; the post-operative diagnosis; the complications of convalescence?

When it comes to the clinical departments these questions are significant. Are clean and septic operations conducted in same operating room? Are diagnoses of surgical patients posted in operating room in advance of operation? Are findings at operation recorded immediately after operation?

Nearly two pages of questions relate to the opportunities afforded to interns. By these questions the College seeks definitely to know whether or not the hospital offers reasonable facilities for the training of interns. The information sought here will be alike helpful to hospitals and to recent medical graduates who seek internships.

THE BUSINESS OF THE COLLEGE IN STANDARDIZATION

Although the facts are well known to the Fellows of the College, some word here may

be of interest as to why the College entered the field of hospital standardization.

This, briefly, is the reason: The College is a responsible society of about 4,000 surgeons. It aims to include in its Fellowship all who possess practical scientific knowledge of medicine and surgery together with honor, trustworthiness, and strong moral character. To determine upon the fitness of candidates for Fellowship is a grave problem which involves an estimate of the candidate's training in the medical school and in the hospital as intern and assistant. The problem is further complicated by the fact that among hospitals there is wide discrepancy in the educational opportunities offered; there is confusion as to the value of all phases of these opportunities even among hospitals of like or comparable equipment.

The Regents of the College must therefore answer two questions: First, what are the actual standards in the practice of medicine and surgery among hospitals? Second, what is an acceptable standard in the practice of medicine and surgery among hospitals? This second question involves the larger question as to whether the standards among our best hospitals are too good for the humblest patients anywhere on this continent? The Regents, therefore, take up hospital standardization as an obligation of their trust.

AMERICAN COLLEGE OF SURGEONS

ADMISSION TO FELLOWSHIP

REVISED requirements for admission to Fellowship in the American College of Surgeons have just been issued by the College. This pamphlet is a revision of Bulletin No. 1 and contains some changes over the original bulletin which have grown out of the experience of the College during the past four years. Explanation of the more important of these changes is given here in the Journal. But the interesting feature of this new bulletin really lies in things not explicitly written in it and this feature, therefore, is here first emphasized.

The requirements for admission to Fellowship in the College are a clear-cut standard in surgery which has to do both with scientific attainments and with character. That standard has proved itself to be workable and practicable. It is a test of surgical efficiency and as such reaches to the very roots of the profession. It is one of the forces today which makes for the standardization of the profession. The fact is that surgery can not be far disengaged from general medicine. Medicine is a single science. Every doctor is in some measure a surgeon; and if surgery or any branch of the science of medicine makes progress, the effect is to draw with it all other divisions of the science.

But the advance of surgery, as indicated by the regulations of the College, is still further related to the standardization of the profession. It is linked with and inseparable from the standardization of hospitals, which is very direct standardization of the profession. And, still more important, it is inseparable from the greatest of all standardizaing agencies which, in these rugged times, are the offices of the Surgeons General in Washington where the medical activity of the Army, of the Navy, and of the Bureau of Public Health is controlled. From these centers, with speed never before approached in the history of medicine, has come standardization of medicine and surgery and of all that makes for health. Standardization of case records, of physical examinations, of laboratory routine, of medical and surgical procedures, of sanitary measures, standardization which is the straightest thinking of the strongest minds in the profession, have all found quick application in our vast military service. The war has cut us loose from medical limitations of the past to which we can never go back.

This momentum of the government toward medical efficiency has not perhaps reached the folk in the far lanes of the country. But that it will reach these people in the near future and all the rest of us, no one can doubt. With millions of men trained in government service, which service includes insight into modern medical efficiency, we need not expect these men on their return home to accept a lower standard of medicine for themselves, for their families, or for their friends. They will demand and have standardization.

But when the soldiers return to their homes, what reliable standard in medical matters will they have? Naturally, they will ask the profession itself first for its credentials. What credentials does the profession have? The "polite fiction" that a medical diploma and a license to practice medicine are evidence of fitness is not enough. But the profession itself is quite capable of producing satisfactory credentials. It can itself set up a standard and enforce that standard without fear; and that is exactly what the profession has done through the American College of Surgeons in so far as the specialties of surgery are concerned. The College is the standardization of surgery. Its requirements for

admission to Fellowship are not only a standard of surgery recognized throughout this continent by the profession, but they constitute also a standard which with increasing rapidity the general public accepts. The standard of the College is, further, accessible to the public because the College publishes annually a year-book in which are listed the names of those surgeons who are qualified. This year-book is distributed to the Fellows of the College, to hospitals, libraries, clubs, etc. It is a directory of surgeons of the United States and Canada who are competent.

The College as a factor in the medical profession has now passed through its period of trial. The responsibility that it be fearless and just in its administration daily increases. It says in effect to all specialists in surgery: "We want you with us. But we ask your initiative in making application for Fellowship; and we ask evidence also that you are honestly qualified for Fellowship." Application blanks may be had on request from the College.

The College greatly appreciates suggestions from its Fellows, from other doctors, and from hospital superintendents as to names of surgeons who are considered right material for Fellowship. Especially the College desires the names of surgeons who were graduated less than eight years ago and who are therefore at this time not eligible to Fellowship. It desires to keep in touch with the careers of these men and from time to time to send them bulletins of the College which have to do with the progress of surgery.

CREDENTIALS IN OPHTHALMOLOGY

One important change in the requirements for admission to Fellowship affects the opthalmologists. This change is stated in Article 10. As explained later in these pages, case records offer an effective check upon the qualifications of a candidate in general surgery. But as a test of the surgical judgment and of the training of eye specialists, the case records have proved of less value. In co-operation, therefore, with the American Board for Ophthalmic Examinations the new plan is worked out. In this period of trial for the new requirements the American Board and the Ophthalmic Credentials Committee of the College are one and the same body. The personnel of the committee is Dr. Edward Jackson, Denver; Dr. Frank C. Todd, Minneapolis; Dr. William H. Wilder, Chicago; Dr. Edward C. Ellett, Memphis; Dr. Walter B. Lancaster, Boston; Dr. Hiram Woods, Baltimore, and Dr. Myles Standish, Boston; Dr. John E. Weeks, New York.

REQUIREMENTS FOR ADMISSION TO FELLOWSHIP

1. The candidate shall be a graduate of medicine, licensed to practice medicine in his respective state or province, or accepted as a medical officer in the service of his country.

2. To be eligible for Fellowship without technical examination the candidate shall be a graduate of a medical school approved by the American College of Surgeons. If the candidate's school of graduation is not accredited by the American College of Surgeons, he may be required to pass a technical examination in one or all subjects of the medical curriculum.

3. The candidate shall give evidence that he has served at least one year as an interne in a creditable hospital and two years as a surgical assistant, or he shall give evidence of an apprenticeship of equivalent value. Five to eight years after graduation in medicine, devoted to special training and to practice, are normally the time-requirement for eligibility to Fellowship. Due importance is attached to laboratory and research work.

4. The ethical fitness and integrity of the candidate and his professional attainments shall be passed upon by the Credentials Committee of his state or province before he is entitled to take the examinations for admission to Fellowship, as hereinafter described. To aid the Committees in this work the Fellows of the College are asked from time to time for definite and impersonal reports concerning candidates in their respective states and provinces.

5. The professional activity of the candidate shall be limited to the study, diagnosis, and operative work in such specialty or specialties of surgery as the candidate may himself designate, as follows: First, if the

candidate resides in a city of less than fifty thousand inhabitants, at least fifty per cent of his professional activity shall be limited to the study, diagnosis, and operative work in such specialty or specialties as stated. Second, in cities of over fifty thousand inhabitants, at least eighty per cent of the professional activity of the candidate shall be so limited.

6. The candidate shall make formal application for Fellowship. Blank forms for this purpose may be had, upon request, from the Secretary General of the College.

7. In making application for Fellowship the candidate shall sign a declaration which reads as follows:

"I hereby promise upon my honor as a gentleman that I will not, so long as I am a Fellow of the American College of Surgeons, practice division of fees in any form; neither by collecting fees for others referring patients to me; nor by permitting them to collect my fees for me; nor will I make joint fees with physicians or surgeons referring patients to me for operation or consultation; neither will I in any way, directly or indirectly, compensate any one referring patients to me; nor will I utilize any man as an assistant as a subterfuge for this purpose."

8. Surgeons widely recognized by the profession as leaders of progress and exponents of finished technique, by a unanimous vote of the Board of Regents, may be admitted to Fellowship on recommendation of the Committee on Examinations. Personal candidature for Fellowship on this basis, however, is not entertained. All candidates for Fellowship are requested to make formal application as described under Articles 6 and 7.

9. The examination in the art and technique of surgery, consists of, first, fifty complete case records to be submitted by the candidate of major work performed by himself; second, fifty case records in brief abstract of major work for which he was responsible or in which he acted as assistant. For requirements in ophthalmology see Article 10.

In order that this requirement be more explicit, the College has prepared a series of record forms which indicate, in a general manner, the data desired in so far as they are applicable to each case, and the form within reasonable limits in which these data should be submitted.

The essential data for the fifty complete case records are the identification of the case by number—the name need not be given; date of operation; personal history relevant to complaint; diagnosis on which operation was based; operative record, findings at operation, and technique; laboratory and physical findings; postoperative diagnosis; complications of convalescence; follow-up record in so far as available. A summary of each case, as explained later. is also desired. The essential data for the fifty case records in abstract are the identification of the case by number; date of operation; and brief statement of operation.

10. In addition to the general requirements for admission to Fellowship (except Article 9), the examinations in ophthalmology consists of, first, case records; second, written examinations; and, third, clinical laboratory and oral examinations, or so much thereof as may be judged necessary:

a. Candidates in ophthalmology are required to submit twenty-five complete case records in accordance with Article 9. Ten of these records should be of cases of ocular diseases and defects of varied character, including errors of refraction or muscle balance; external ocular diseases or diseases of the uveal tract or retina, or of the optic nerve, or glaucoma. The reports should show especially the reasons for the diagnosis and for the operative treatment, and the technique of operations.

b. The written examination will test the candidate's knowledge of the underlying principles or science of ophthalmology, including anatomy, embryology, physiology, physiologic optics, pathology, relations of the eye to other organs and diseases of the body.

c. The oral examination will include:

1. The external examination of the eye.

2. Ophthalmoscopy. (Candidates are requested to bring their own ophthalmoscopes.)

3. Measurements of errors of refraction.

4. Testing of the ocular movements and fields of vision.

SUMMARY CARD

Name Address Case No.

Physician's name	Age	Date of adm.	Date of op.	Date of dis.	S M W yrs. yrs.	Re-entry
Address						

Permanent friend's name

Address

Came for relief of

Diagnosis on which treatment was based

Surgeon or physician responsible for treatment

Anæsthetist and form of anæsthesia

Operation or treatment: important points

Complications of convalescence

Pathologic report

Postoperative or final diagnosis

5. Relations of ocular conditions to diseases of other parts of the body, and their treatment.

6. Laboratory examination in histology, pathology, and bacteriology of the eye.

d. The time and place of examination will be determined from time to time by the Ophthalmic Credentials Committee.

11. The Regents of the College reserve the right to alter from time to time regulations respecting the admission of Fellows to the College as they may deem proper.

CASE RECORDS AND SUMMARY CARD

In further explanation of the case records the College states that these records, if properly kept, provide straightforward, truthful, and readily accessible answers to these questions: What was the matter with the patient? What did the doctor do to him? What was the result? The College is especially interested in the thoroughness of the diagnosis and the judgment and skill of the surgeon in treating cases as evidenced by the records.

In general, the purposes assigned for the keeping of case records are, first, their value in medical science; second, their value in the practical care of patients; and, third, their medico-legal value. In addition to these purposes, as already stated, the case records serve as an efficiency test in the care of patients; and it is this purpose in which, in the admission of Fellows, the College is interested. Obviously each surgeon should undertake to care only for such cases as he is qualified by equipment and training to treat, except under circumstances of emergency. By frequent review of end-results each surgeon should determine whether or not his

cases are successfully treated, and if not, why not. Case records are the basis for such critical reviews.

But the case records, although accurately kept, are frequently not available for review because the important information in them for this purpose is lost in other details. It is recommended, therefore, that leading facts in each case be recorded upon a summary card. Such a summary card is here suggested. For convenience the card should be about 5 by 8 inches.

For the details of this card, and for insistence upon its value in medical and surgical efficiency, the College is indebted to Dr. E. A. Codman of Boston. Some explanation of headings of the card is here given.

"Diagnosis on which treatment was based." A physician or surgeon who treats a patient should be willing to state what pathologic condition he believes he is treating. Both the profession and the public realize that in clinical work it is often impossible to be certain that the working diagnosis is correct. With the best of equipment and of medical knowledge diagnoses are frequently incorrect in some details, but when a doctor accepts the responsibility of treatment he is, in fairness to the profession and to his patient, under obligation to state what he believes is the cause of the illness for which the patient seeks relief. If the cause of the illness cannot be determined, the physician or surgeon responsible should at least state that fact.

"Physician or surgeon responsible for treatment." If one physician or surgeon only is concerned in a case, it is clear that he is responsible. But in modern hospital practice it frequently happens that the responsibility is divided among many individuals. The profession is agreed, however, that in a properly conducted hospital either the chief of the service or one of his subordinates should hold the same position of responsibility toward the patient as does his family physician. When the responsibility is multiple, a physician or surgeon should be assigned to the patient who sees him through the care of other specialists, and the name of this physician or surgeon should be entered upon the case-record.

"Important points of operation or of treatment." Under this heading the physician or surgeon responsible should note only the essential points. He should write down the points which he may wish to know a year later if the patient returns to report his condition. If the operation or treatment is very complicated, notation may be "a difficult, complicated operation described in detail in main record."

"Complications of convalescence." This heading is most important for efficiency studies. If the word "none" follows the heading, it means that there were literally no complications such as sepsis, bronchitis, cystitis, phlebitis, intercurrent infections, or other conditions resulting directly from the treatment or operation or following it from other causes.

"Pathologic report." So much of the various pathologic reports as would be important for the person who examines the case a year later to know, should be entered under this heading. It is not expected to be a complete statement of the pathology, but merely the main pathologic diagnosis.

"Postoperative or final diagnosis." The record here entered is quite essential to an analysis of the efficiency of the work done in the hospital.

On the reverse side of the card should be entered notes of the case made at subsequent visits of the patient, or from subsequent reports as to the condition of the patient. These notes should be brief, accurate, and fearlessly truthful. In general, the notes under the different headings should be made with the idea that they are available for rapid review. Wherever details are important and yet too extensive to be placed on the card, reference should be made to the main record.

AMERICAN COLLEGE OF SURGEONS

STANDARD OF EFFICIENCY

First Hospital Survey of the College

THE Regents of the American College of Surgeons herein state the factors which are the basis of the first hospital survey of the College. These factors are restricted to imperative essentials of good work. They have to do with the keeping of case records and the utilization of these records as tests of efficiency; with clinical laboratory facilities; and with the character of the staff.[1]

By general agreement among doctors and hospital superintendents these factors are fundamental to creditable work in a hospital. They are concerned with the kind of care the patient receives in the hospital. They do not offer a complete test of efficiency, but they draw no false lines. They are easily intelligible to laymen and to doctors. They are applicable to the small hospital and to the large one. They are tests which depend upon constant, earnest effort and of sound training rather than expenditure of money. And, most important, they constitute a simple, workable, and practicable basis of standardization upon which hospitals may meet as a starting-ground for further headway.

An angle of hospital standardization important to remember is this: As a people we are accustomed to hospital service; we look upon that service no longer as a luxury which we may buy, but rather as an inherent right. The humblest patient is entitled to the best of medical service. In the last twenty years especially this idea has taken hold of us. We regard the right to health today much as we regard the right to life.

It follows now that in so far as the right to health is a right of society, all hospitals in a broad sense are public service institutions. On the one hand, hospitals in which sound honest care is given patients may reasonably ask the confidence, good will, and support of their communities; on the other, all hospitals are accountable to the public for their degree of success. By general consent the time has come for an accounting on both sides of the equation. Such an accounting is inevitable. If the initiative is not taken by the medical profession, it will be taken by the lay public; and this entire accounting is what we mean by hospital standardization. It is an analysis of the obligation of the public to support hospitals; and it is a practical accounting to the public of the business and scientific efficiency of hospitals.

Ultimate results of hospital standardization are a matter of evolution, of good will, of honesty and fearlessness in facing facts, of team-work, and of patience. Again, the widely varying conditions under which hospitals operate make hard and fast standards quite impossible. But, remembering these things, there is nothing insurmountable in the task.

To come now to definite criteria upon which hospitals may be justly classified: The policy of the College in its first survey, as already stated, is to define the few factors which are imperative in any hospital for the proper care of patients. Some of these factors must be conceived as flexible in order to meet fairly the various conditions under which hospitals operate. But as definitely as may be the purpose of the College is to define and fully to explain the requirements and then to

[1] In these pages the word staff means the group of physicians and surgeons privileged to practice in the hospital.

classify hospitals according to the degree to which they fulfill them. Details of this minimum standard follow:

1. CASE RECORDS

That the hospital keep in a systematic manner case records of its patients together with a convenient summary of each case; and that it utilize these records in analyses of its medical and surgical efficiency.

What is meant here by case records? These records are the scientific data which pertain to each case treated in the hospital, usually under the following headings, when applicable: Identification of the patient by name or number; name of physician or surgeon responsible for the case; personal history of patient relevant to complaint; diagnosis on which treatment was based; laboratory and physical findings; important points of operation or of treatment; postoperative diagnosis; complications of convalescence; follow-up records; autopsy findings. Case records, when properly kept, provide straightforward and truthful answers to these questions: What was the matter with the patient? What did the doctor do for him? What was the result?

In Bulletin No. 1, revised February, 1918, the College has issued a set of case record forms which may serve as helpful suggestions in the matter of record keeping. Copies of this pamphlet may be had upon request.

The usual purposes assigned for the keeping of case records are: first, their value in medical science; second, their value in the practical care of patients; and, third, their medico-legal value. And in addition to these purposes, the case records serve as an efficiency test in the care of patients which is most important in hospital standardization.

But, in detail, how do case records serve as an efficiency test? Obviously each hospital should undertake to care only for such cases as it is qualified by equipment and personnel to treat, unless the circumstances of its geographic situation or other reasons make it necessary that the hospital accept all cases which seek its aid. The integrity of the profession requires that each hospital should determine whether or not its cases are successfully treated and if not, why not; it requires that the staff by periodic review of its end-results determine the types of cases which, by equipment and training, it is qualified to treat and that, except under unusual circumstances, it limit its service to such cases. Case records provide the information for these reviews. They are not, therefore, merely a clerical procedure; they are the very index of the success of all clinical work in the hospital.

Consistent and fearless review of case records by the hospital staff, as here suggested, is a just and effective means to deal with incompetent medical and surgical work in a hospital. The checking up of end-results and the checking up of diagnoses before and after operation are a practical test of surgery. Facts are not debatable; and facts and then more facts are needed to deal with those difficult problems of unnecessary surgical operations and of operations performed by untrained surgeons. If the facts establish evidence that a physician or surgeon is unsafe in judgment, unworthy in character, untrained, lax, lazy, or careless, in all honor and decency that individual should either overcome his deficiencies or withdraw from practice. Certainly he should neither ask nor receive the privileges of practice in a hospital. In general, it is the business of the staff to take the initiative in this matter. It is the professional duty of the staff to take such initiative. Without the guidance of the staff the trustees are helpless. A wise use of honest case records point the way to great advance in the medical profession.

But in many a hospital the case records, although accurately kept, are not available for review on the part of the staff or of the hospital administration because the significance of the records is lost in details. It is recommended, therefore, that important data in each case be recorded upon a summary card in order that the data may readily be reviewed. To this end the summary card (see opposite page), which for convenience should be about 5 by 8 inches, is suggested:

For the details of this card and for insistence upon its value in hospital efficiency

SUMMARY CARD

Name Address Case No.

Physician's name	Age	Date of adm.	Date of op.	Date of dis.	S yrs. M yrs. W yrs.	Re-entry
Address						

Permanent friend's name — Operation or treatment: important points

Address

Came for relief of

Complications of convalescence

Diagnosis on which treatment was based

Pathologic report

Physician or surgeon responsible for treatment — Postoperative or final diagnosis

Anæsthetist and form of anæsthesia

the College is indebted to the Committee[1] of the Clinical Congress of Surgeons appointed by Dr. Edward Martin, Philadelphia. Some explanation of headings of the card is here given.

Name. Address. Case No. Inasmuch as the summary cards are for review by the entire staff and by the hospital administration, it is usually advisable not to enter the name of the patient on the card. The case number is sufficient identification.

Diagnosis on which treatment was based. A physician or surgeon who treats a patient should be willing to state what pathologic condition he believes he is treating. Both the profession and the public realize that in clinical work it is often impossible to be certain that the working diagnosis is correct. With the best of equipment and of medical knowledge diagnoses are frequently incorrect in some details, but when a doctor accepts the responsibility of treatment he is, in fairness to the profession and to his patient, under obligation to state what he believes is the cause of the illness for which the patient seeks relief. If the cause of the illness cannot be determined the physician or surgeon responsible should at least state that fact.

Physician or surgeon responsible for treatment. If one physician or surgeon only is concerned in a case, it is clear that he is responsible. But in modern hospital practice it frequently happens that the responsibility is divided among many individuals. The profession is agreed, however, that in a properly conducted hospital either the chief of the service or one of his subordinates should hold the same position of responsibility toward the patient as does his family physician. When the responsibility is multiple

[1] The personnel of this committee is: Dr. Allen B. Kanavel, Dr. Walter W. Chipman, Dr. John Goodrich Clark, Dr. William J. Mayo, and Dr. Ernest A. Codman.

a physician or surgeon should be assigned to the patient who sees him through the care of other specialists and the name of this physician or surgeon should be entered upon the case record.

Important points of operation or of treatment. Under this heading the physician or surgeon responsible should note only the essential points. He should write down the points which he may wish to know a year later if the patient returns to report his condition. If the operation or treatment is very complicated notation may be "a difficult, complicated operation described in detail in main record."

Complications of convalescence. This heading is most important for efficiency studies. If the word "none" follows the heading, it means that there were literally no complications such as sepsis, bronchitis, cystitis, phlebitis, intercurrent infections, or other conditions resulting directly from the treatment or operation or following it from other causes.

Pathological report. So much of the various pathologic reports as would be important for the person who examines the case a year later to know should be entered under this heading. It is not expected to be a complete statement of the pathology, but merely the main pathologic diagnoses.

Postoperative or final diagnosis. The record here entered is quite essential to an analysis of the efficiency of the work done in the hospital. This final diagnosis should be the one used for filing or cataloguing.

Follow-up Notes. On the reverse side of the card should be entered notes of the case made at subsequent visits of the patient, or from subsequent reports as to the condition of the patient. These notes should be brief, accurate, and fearlessly truthful. In general, the notes under the different headings should be made with the idea that they are available for rapid review. Wherever details are important and yet too extensive to be placed on the card, reference should be made to the main record.

In conclusion the College would emphasize the importance of adequate records. They are in effect a pledge to the public for the integrity of all work done in the hospital. By earnest and constant attention to case records it often happens that an isolated and poorly equipped hospital makes up for its material deficiencies, first, because its staff is inspired always to its highest attainments; second, because by honest selection of its cases it will not undertake the treatment of cases for which it is not equipped. It follows, therefore, that such a hospital may be rated higher than a large hospital with modern equipment and scientific reputation.

2. CLINICAL LABORATORIES

That, as implied in the foregoing requirement concerning case records, the hospital provide either directly or indirectly the laboratory facilities which in the science of medicine are essential in the diagnoses and treatment of patients admitted for care under normal conditions.

While for economic reasons and expediency it is usually advisable that the clinical laboratories be owned and operated by the hospital, neither ownership nor control of the laboratories is essential. In many instances state, county, municipal, or private laboratories supplement to advantage the laboratory facilities of the hospital.

Because of the wide discrepancy in the range of diseases and illness treated by hospitals it is not feasible to stipulate minimum laboratory facilities. Efficient laboratory service is here emphasized rather than details of equipment. The laboratory requirement is, therefore, that the hospital have the constant use of clinical laboratory facilities adequate in the scientific diagnoses and treatment of its patients. The extent of the laboratory facilities with which a hospital should provide itself depends upon the types of cases normally admitted for treatment. In a general hospital the clinical laboratories, under a practical laboratory worker, will provide when adequately equipped, chemical and microscopical examinations, including blood examinations, gastric contents, sputum examinations, urine analyses, fæces examinations, and examinations of cerebrospinal fluid; bacteriological examinations; patho-

logical and serological examinations; electrocardiographic examinations; and X-ray examinations. The laboratories should include also a postmortem room, instruments for the performance of autopsies, and facilities for the preparation of frozen sections.

3. DIVISION OF FEES

That the hospital trustees or governing authority in co-operation with the staff take action definitely to prohibit from all services of the hospital the practice of division of fees.

The evil of the division of fees is so widely recognized that emphasis of it here is not needed. The practice is prohibited by law in Kansas, Nebraska, Iowa, Minnesota, Wisconsin, Ohio, Alabama, West Virginia, Tennessee, and Colorado. Where it exists under any guise whatever, it is in reality the buying and selling of people who are ill. The consequences of the division of fees are, first, incompetent medical and surgical service; second, unnecessary surgical operations; and, third, the deadening of scientific incentive in the profession and the lowering of the whole profession of medicine into dishonesty. The fact is unchallenged that no intelligent community would tolerate this practice in its midst if the community were aware of the practice and of its significance.

A secret profit made upon the sale of eye glasses or of appliances is considered division of fees.

The College requests each hospital to meet this issue squarely. It asks that by resolution the trustees or governing authority of the hospital in cooperation with the staff of the hospital go on record substantially as follows:

Be it resolved: First, that physicians and surgeons who may have the priveleges of practice in (name of hospital) shall not engage in division of fees under any guise whatever while they avail themselves of these priveleges;

Second, that physicians and surgeons privileged to practice in the aforesaid hospital shall, by the acceptance of these privileges thereby pledge themselves to the following principle:

I hereby agree that as a principle I shall not engage in the division of fees under any guise whatever. By this principle I understand that I am not to collect fees for others referring patients to me, nor to permit others to collect fees for me, nor to make joint fees with physicians or surgeons referring patients to me for operations or consultation, nor knowingly to permit any agent or associate of mine so to do.

Third, that a copy of this resolution shall be conveyed to each physician and surgeon privileged to practice in the aforesaid hospital.

In a large number of hospitals the practice of the division of fees has never existed, and sometimes the staffs of these hospitals are sensitive with regard to passing a resolution as stated above. The Regents of the College believe, however, that these hospitals will, after due consideration, gladly take action as recommended because of the influence which they will have by such action upon hospitals where the practice does exist.

IN THE WAY OF PROGRESS

Neither the hospitals nor the College would ultimately be content with standardization which takes into account only the foregoing minimum standard. Having made a beginning of standardization and agreed upon a common meeting-ground, as stated in the foregoing pages, other important factors of hospital work call for attention. The College respectfully asks that hospital staffs from time to time consider the various problems which, in their judgment, should become part of the standardization program and that they send to the College both suggestions and reports of progress. Some of the phases of hospital work which were considered of prime importance by the General Hospital Committee are here stated,—

THE TRAINING OF INTERNES. The training of internes affects directly a comparatively small percentage of the hospitals. In a larger sense, however, it affects all hospitals and in fact all of the people of the continent, for it has to do, more than is generally realized, with the making of competent physicians and surgeons. Dr. Edward Martin, for instance, estimates that a doctor on graduation from medical school is only twenty per cent efficient as a practitioner of medicine, and

that service as an interne under right conditions may provide nearly eighty per cent of the training of a dcotor. Dr. Allen B. Kanavel writes: "The medical school sends the student from its doors with a diploma asserting that he is qualified to practice medicine, a polite fiction that we have accepted while at the same time belying our acceptance by insisting that the student should serve an interneship."

In Pennsylvania and in Minnesota today the medical graduate is required to serve an interneship of one year before he is licensed to practice. In Pennsylvania the Bureau of Medical Education and Licensure inspects hospitals with special reference to the training of internes; further, it states in what hospitals service as an interne is acceptable in partial fulfillment of the requirements for practice in that state. The leadership in this matter taken by Pennsylvania will undoubtedly be followed by other states.

The staff of each hospital where internes are engaged may well consider the following questions: Do internes receive training in the writing of case records? Do chiefs of departments give instruction to internes at the bedside of patients and throughout the procedure of each case as to the salient points of record-keeping? Are internes under competent guidance trained in the clinical laboratory? Do they follow clinical cases to the laboratory? Do they receive systematic training in the making of postmortem examinations and in the preparation of sections of tissue from postmortems for microscopical examinations? Are they permitted to do independent major surgery or to take full charge of obstetrical cases in the first year of apprenticeship? Do the influences of the hospital make for high ideals of practice? Do they create the right start for a busy, happy, and useful professional career?

THE TRAINING OF NURSES. The training of nurses came into existence in hundreds of hospitals as a matter of expediency, and it is only in recent years that this subject has been given due consideration. The trained nurse is an indispensable aid in the care of patients. She is also a power in preventive medicine. In fairness now to the nurses themselves, and to the patients whom they are to serve, comes the question as to whether the three years required in the training school are really three years of educational training? Is a sound curriculum provided for the instruction of nurses? Is the teaching under competent supervision? Are pupil nurses sent out into families? If so in what year? Are pupil nurses placed on special cases in the hospital? If so, in what year? Are fees received by the hospital for special duty of pupil nurses? Is the practice medically and educationally justified? The training of the nurse should be given the same thoughtful attention as that given to the interne.

POSTMORTEM EXAMINATIONS. The keeping of case records implies that postmortem examinations are made whenever consent for such examinations can be obtained. The value of these examinations is here specially emphasized. The postmortem is a merciless criticism of the work of physicians and of surgeons. It is the sort of criticism, however, which physicians and surgeons who are guided by a scientific spirit welcome. There is probably no phase of hospital work which will so definitely put an end to incompetent and unnecessary surgery, and to careless and indifferent diagnoses in medical cases as will a consistent policy of postmortem examinations with staff review of the findings. Further, these examinations, if their results are regularly and fearlessly reviewed by the staff, will serve as a stimulus to scientific work and to valuable investigations. Again, they justify the effort which they cost a thousandfold in their practical value to the immediate relatives of the deceased.

Each hospital staff should ask itself from time to time as to whether or not its percentage of postmortem examinations is as large as could reasonably be expected. Are the complete autopsy reports filed with the respective case records? Does the pathologist meet with the staff to review the clinical histories in relation to autopsy findings? Are the immediate relatives of the deceased informed fully as to the probable value to them of the postmortem examinations?

OBSTETRICS. More credit than has yet been recognized is due to Dr. J. M. Baldy,

president of the Bureau of Medical Education and Licensure of Pennsylvania, for his insistence that the hospitals of Pennsylvania provide obstetrical departments. Dr. Baldy has also done much to educate the people of Pennsylvania as to the value of hospital obstetrical departments. This whole problem touches in a vital way the conservation of the life of the nation. It means the saving of thousands of babies which unnecessarily die in the first few weeks or months of life. In the next ten years it is reasonably certain that great advancement will be made in obstetrical services. Certainly this whole problem is one which should receive the most earnest consideration of each hospital staff.

If a hospital today does not provide for an obstetrical service, for what reasons is this service neglected? If an obstetrical department is provided, does it include a special delivery room? Does it include a nursery? Is prenatal work conducted in the department; in the out-patient department? Do nurses in the obstetrical department come into contact with patients of other departments?

PEDIATRICS. Closely allied to an obstetrical service is work in pediatrics. The initiative taken recently by various state legislatures providing for the care especially of crippled children is indicative of a general awakening of the people to the value of departments of pediatrics in hospitals. Obviously a hospital should not create such a department unless it is in position to have a trained pediatrician in charge. But if such a department is provided, then some important questions which arise are: Is a receiving and observation ward provided? Is an isolation room provided? Are throat, vaginal smears, and other examinations as to infections made of all children before admission? Do nurses of this department come into contact with patients of other departments?

CROSS INFECTIONS. Does the hospital take all reasonable precautions against cross infection? Are examinations of patients on admission, especially of children, adequate in this respect? Are clean and septic operations conducted in the same operating room? Is the sterilization employed in and about the operating room effective? Is infection possible through the laundry or kitchen? Is constant check kept upon these matters? Are sufficient precautions taken with regard to the passing of nurses from one department into another who may carry infection?

Dietetics, anæsthesia, accurate and intelligible financial accounting, hospital administration, the pharmacy and supervision of prescriptions, and the library and encouragement of research are among other important subjects which merit consideration.

For the Board of Regents of the American College of Surgeons

JOHN G. BOWMAN, *Director.*

AMERICAN COLLEGE OF SURGEONS

HEADWAY TOWARD HOSPITAL STANDARDIZATION

STAFF members of the American College of Surgeons are now engaged in six states in the Union upon the hospital survey of the College. While it is still too early for a detailed report of progress, it seems worth while here to state some of the questions being asked by the hospitals concerning the work and to answer these questions.

First, what is the purpose of the survey? Again and again the question is asked.

The purpose of the survey is to make for the better care of folk who are ill. It is to create in the medical profession and among hospitals an increasingly keen sense of responsibility in the care of patients. It is to help in making hospital aims come true.

In these days men evade expression of sentiment and it is difficult to use seriously the word *glory*. But men *feel* glory nevertheless; they feel glory in action, in fight for liberty, glory in the very privilege of life at a time when our highest spiritual aspirations fuse as never before into the day's routine. Sometimes such glory breaks through into adequate rhyme and produces a Homer, a man who had digested his morals. And now, very much in the same way, it seems that an aggressive earnestness of purpose on the part of the medical profession breaks through into an adequate analysis of its own performance. That is hospital standardization. It is digestion of morals in the practice of medicine. It is an awakening of a spiritual impulse which compels action.

But if we are agreed upon the results we want, what action will produce those results? There is doubtless more than one good answer to this question. The answer of the College is published in Bulletin Vol. III, No. 3. Briefly the College asks: What does the hospital do for its patients? Do the trustees and staff from time to time review, preferably in joint session, the work done in the hospital in medicine, surgery, obstetrics? Do they use these data in a sincere effort, first, to get at the facts of successful work and of failures; second, to remove the causes, in so far as they can, of unsuccessful work; and, third, to find in their own records and in their very association together some source of inspiration toward the fulfillment of their own highest purposes? On these matters the College seeks exact information.

Let us assume, for example, that the case records in surgery in a hospital during the past three months, as they come before the trustees and staff, indicate that 11 per cent of the patients developed infection during convalescence. The facts as to the percentage of infections may easily be determined from properly kept records. But obviously 11 per cent of infections is a serious indictment of the surgical service. Now let us assume that 90 per cent of the infected cases were patients of a particular surgeon. It seems reasonable that both the trustees and the staff should take a firm position that either this surgeon discover the cause of the infections and remove that cause, or that he discontinue practice in the hospital. Further, in this connection, questions will naturally rise as to the nursing technique in the operating room. And, again, some one will ask: Are septic and clean cases operated upon one after another in the same operating room?

Too much emphasis in these reviews can not be placed upon the value of postmortem examinations. It is advisable that the pathologist report his findings in each postmortem together with the diagnosis and treatment of the case. Further, the pathologist should report all deaths in the hospital during the period under review and what effort had been

made in each case to obtain a postmortem where it was not made.

Meetings of the trustees and staff should be held at regular intervals; once in two months, or three months, or in such other period as those concerned believe wise. But it is important that the time for these meetings be definitely agreed upon; and it is important that the review of the work done in the hospital during the period covered be fearless, accurate, and constructive, looking toward improvement rather than merely the finding of fault.

The statement is sometimes made in considering this matter that the staff can not be got together; that the doctors would not be present at the meetings if invited. If such a condition is true, it is a serious indictment against the governing authority of the hospital and against the honor of the staff. The product of the hospital is service to its patients; and if those charged with the responsibility of creating this service can not with all sincerity get together to consider their own success or failures, the situation is without thinkable justification.

Again, this question is asked: What power has the College to enforce its plan of hospital standardization? The College has no legal, political, or financial power to make demands of a hospital. It desires no such power. It rests its case in the patriotism and common sense of hospital folk and the medical profession. In the end, too, the whole program must go to the public for its judgment. But only in so far as the program is practicable and right, does it merit success or will it succeed.

The entire plan of the College is the outgrowth of years of thought. It is an effort on the part of the medical profession itself to make swifter progress, to meet and to be worthy of the trust reposed in the profession by the public.

From some of the smaller hospitals comes this question: What will be the effect of hospital standardization upon the hospital, let us say, of 50 beds? The question implies some feeling that standardization will tend to increase the usefulness of the large hospital at the expense of the small hospital. No valid reason has yet appeared which seems to justify such a conclusion. The merit of hospital service is not to be measured by the wealth of the institution, its architecture, or by the professional reputation of its staff. There is no reason why a patient should not receive as efficient care in a hospital of 50 beds, or less, as he would receive in a large hospital. Any readjustment which may be brought about by standardization as to the relation of hospitals to their communities will be solely upon the merit of service. The basic consideration is that each hospital, large or small, accept for treatment, except in emergencies, only such cases as it is by equipment and training of its staff honestly qualified to treat.

An exceedingly fortunate fact in connection with the work of the College is the standardization both of the medical profession itself and of hospital procedures now in effect in the medical services of the Army and Navy. Here thousands of physicians and surgeons under military exactness are being trained in professional efficiency. When these men return to their respective hospitals they will not willingly accept standards of less merit. The head of the medical division of a great base hospital under recent date writes:

"The government does not expect a man to be perfect and is very willing to overlook errors of judgment but it has no patience with errors due to neglect. The record must show in every case that every available resource for making a correct diagnosis and instituting appropriate treatment has been used.

"There is a great deal that all of us who have had the experience of base hospital work can carry back to our home work with the greatest profit. Our hospitals will surely be the better for it!"

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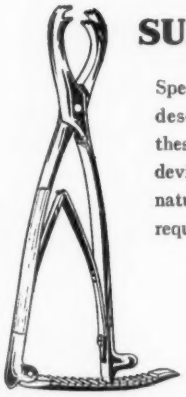

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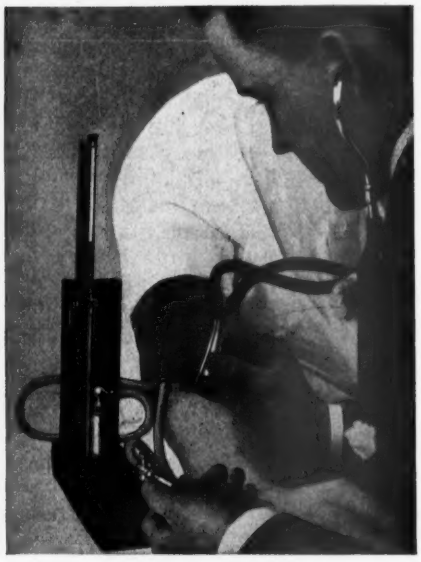

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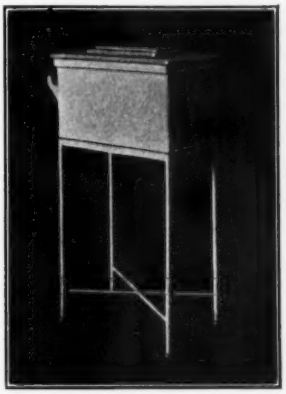

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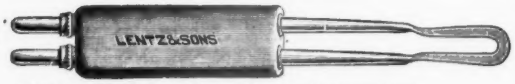

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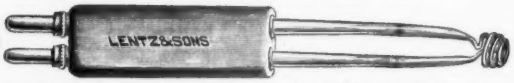

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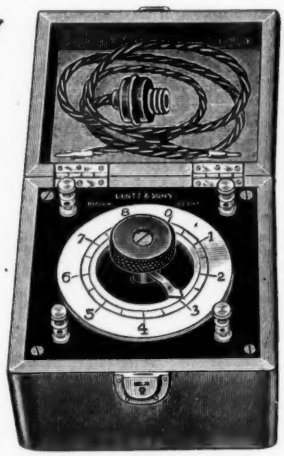

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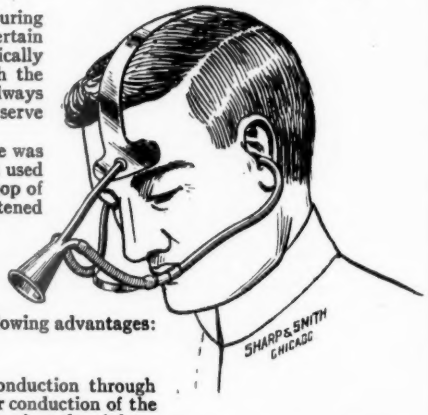

An experience of several months with its use at the Chicago Lying-In Hospital indicates that it has the following advantages:

It gives easy and accurate control of heart tones.

After adjustment, no handling is required.

Heart tones are heard better, since there is bone conduction through the metal parts of the instrument, in addition to the air conduction of the ordinary stethoscope. The bell may be pressed firmly against the abdominal wall without interference from muscle sounds.

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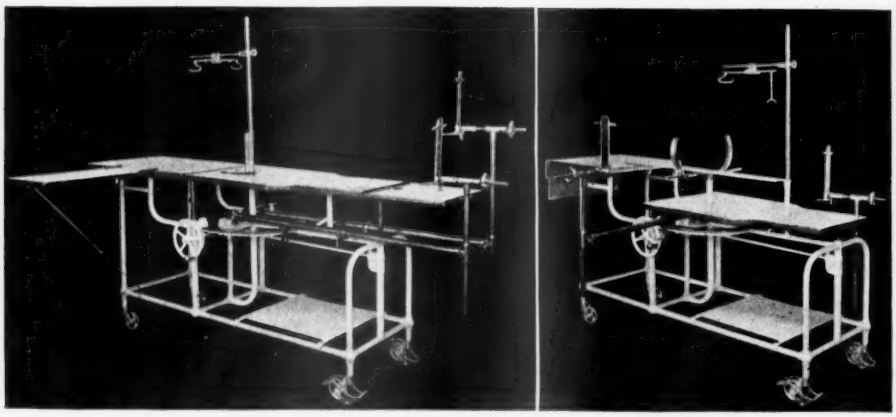
Albee Fracture-Orthopedic Operating Table



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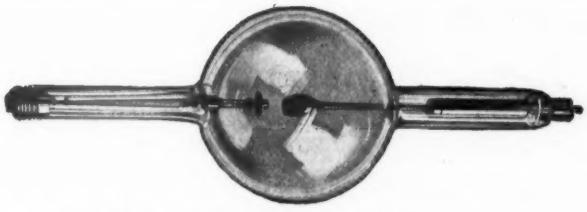

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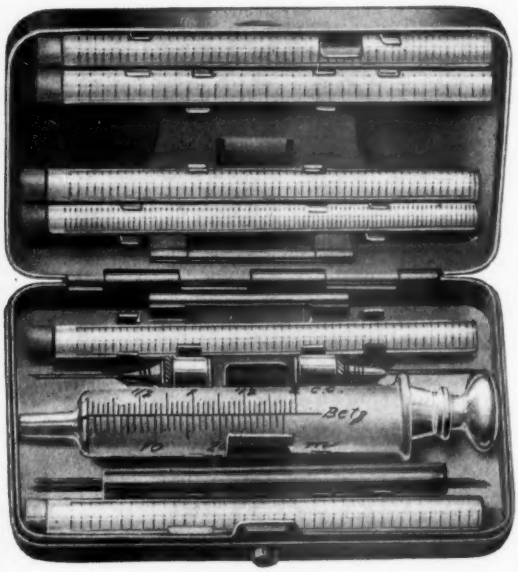

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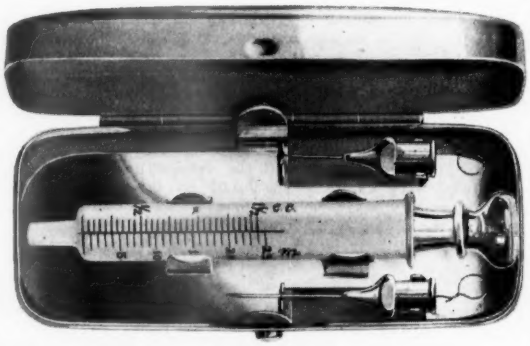

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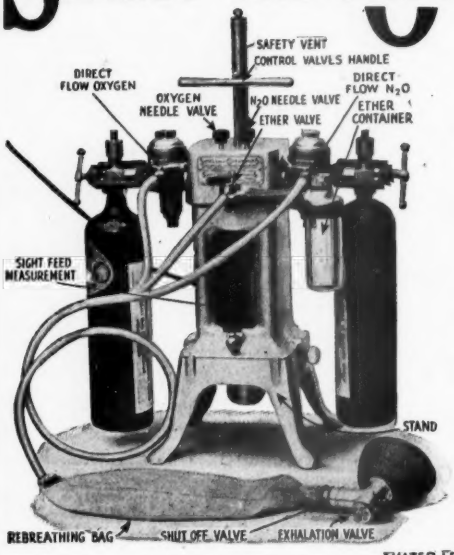

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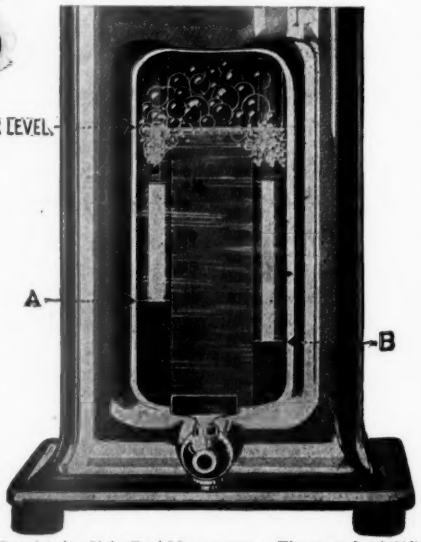

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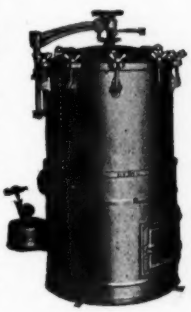

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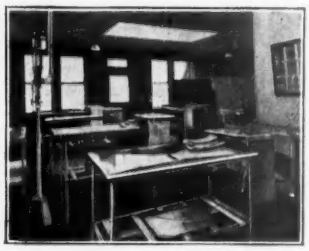

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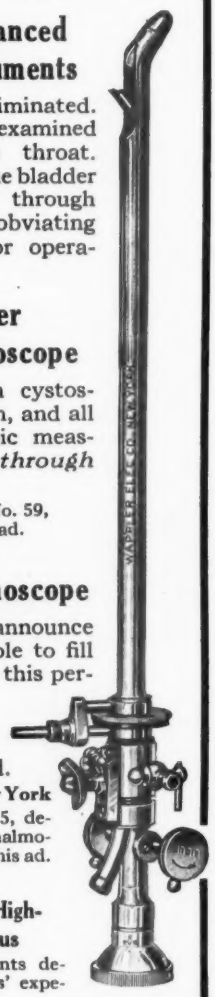

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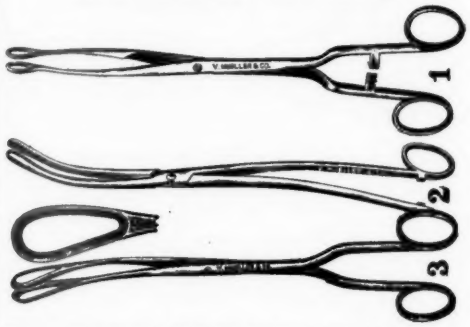

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Fig. 3—Dr. Channing Barrett's Placenta Forceps.

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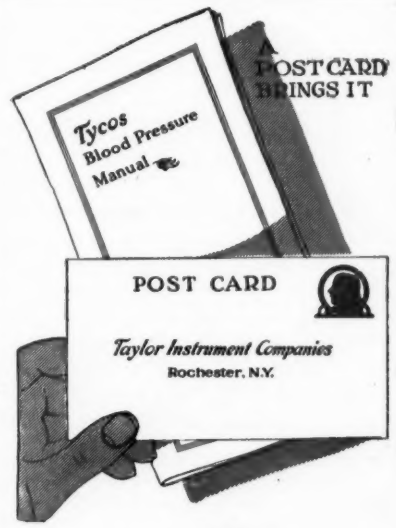

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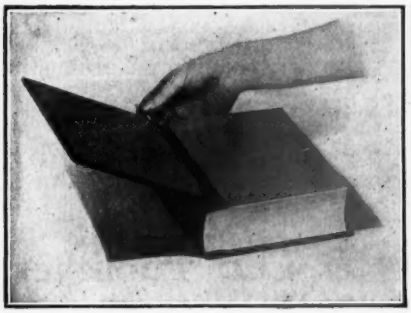

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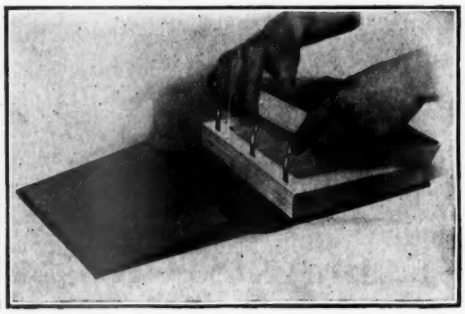

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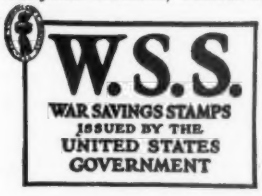

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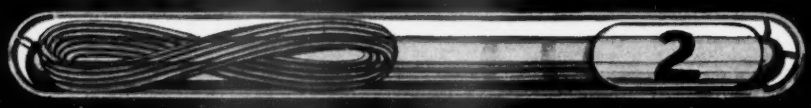

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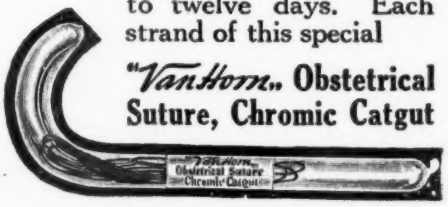

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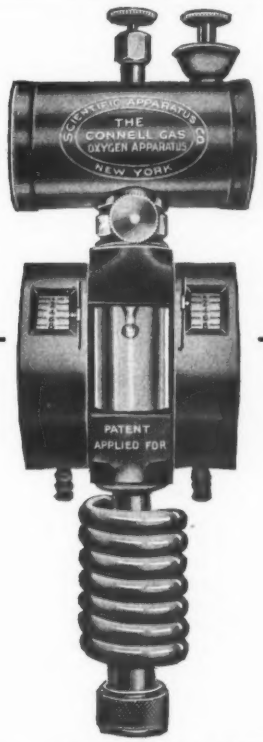

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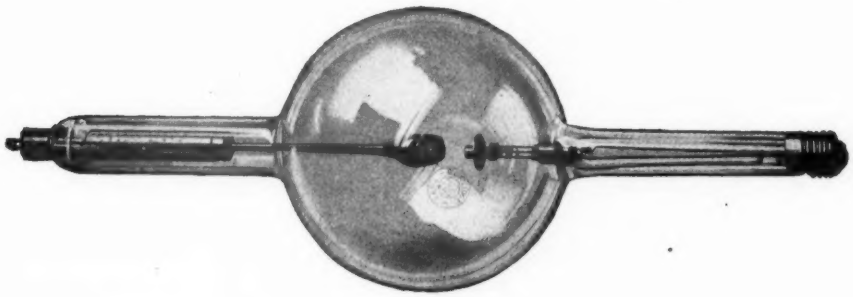

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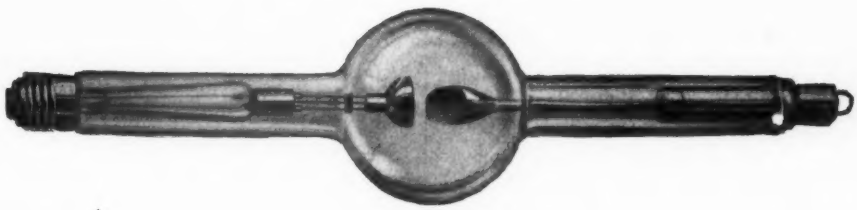

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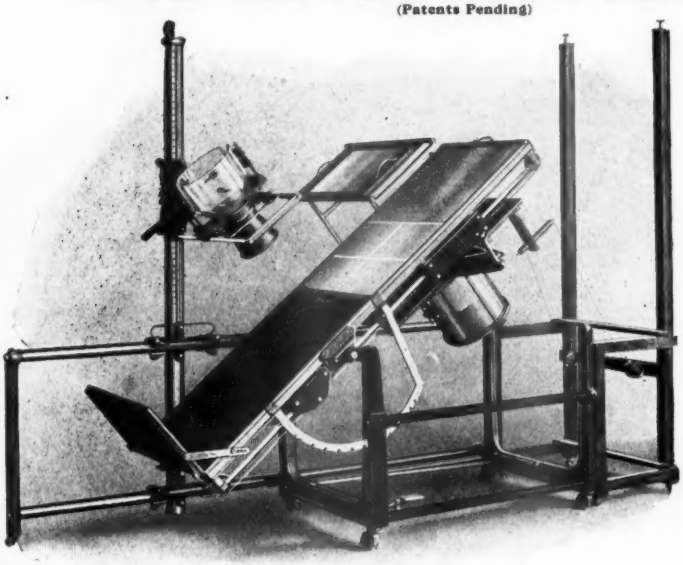

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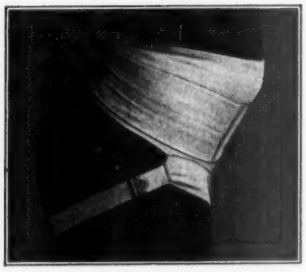

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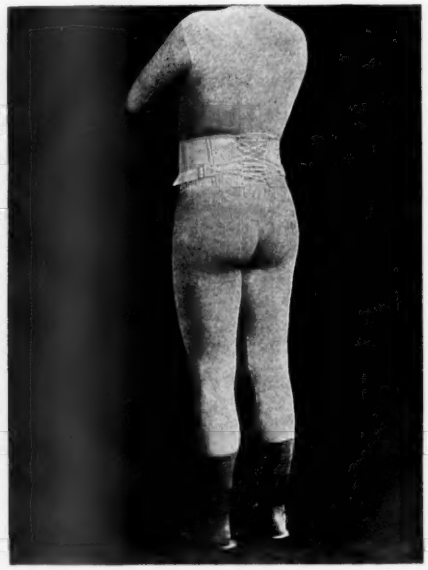

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*United States Public Health Bulletin No. 69, May, 1915.

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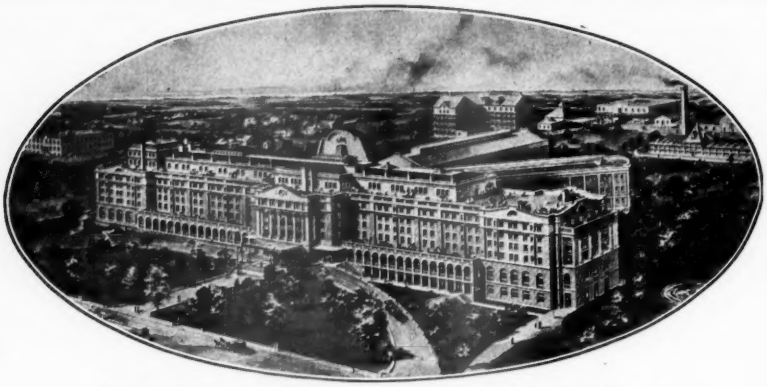

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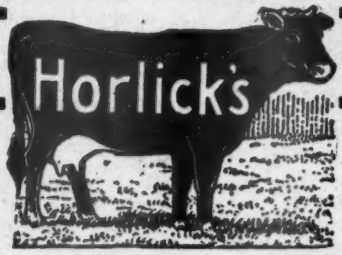

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